

**Identity as process: an archaeological and osteological  
study of Early Bronze Age burials in northern England.**

**Volume 1 of 2**

**by**

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Philosophy at the University of Central Lancashire

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## **Student declaration**

### **Concurrent registration for two or more academic awards**

I declare that while registered as a candidate for the research degree, I have not been a registered candidate or enrolled student for another award of the University or other academic or professional institution

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**Doctor of Philosophy**

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**Forensic and Investigative Sciences**

## **Abstract**

Osteological and archaeological approaches are brought together to investigate questions on the mortuary practices, health, demography, identities, and chronology of Early Bronze Age burials in northern England. Processes of life, death and burial are identified as a way of evaluating the lifecourse and burial processes of Early Bronze Age individuals. Different burial practices have similar themes of the wrapping and enclosing of the dead which are carried out using both temporary and permanent materials.

The results of the PhD refute previous assumptions on the status of men, women and different age groups while revealing new aspects of identity seen through health and burial. Although the burials of adult men are greater in number, the burials of adult women are more commonly associated with artefacts. Men and women suffered from different health problems. Even though women were more likely to live to a greater age, they were also more likely to suffer malnutrition which was seen osteologically through cribra orbitalia. Burial patterns demonstrate a continuum of events from the preparation of the body, through to sequences of burial and closure.

Case studies are used to investigate identities over individual and site levels in different areas of northern England. New radiocarbon dates reveal differences in site histories which contributed to the formation of group identities. Individual case studies are used to evoke the life history and identities of individuals, whilst bringing forth the humanness of these past people.

Identities of men, women and children in the Early Bronze Age are explored. Different possible identities based on occupations, family structures and relations, and, social age groups are revealed. Male and female differences in burials and grave-goods may indicate the local ties of men and more fluid object-related identities among women.

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Any mistakes within the thesis are of course, my own.

### **Abbreviations within the text and their meanings**

- LEH: Linear enamel hypoplasia; an enamel defect to teeth, formed in childhood
- MSM: Musculoskeletal stress markers; marks of muscle attachments on the bones, formed through repetitive activity.
- CEJ: Cemento enamel junction; the margin between the tooth crown and root
- CO: Cribra orbitalia; orbital lesion related to malnutrition
- (c): Cremation sample
- (i): Inhumation sample
- NP: Not possible to assess due to fragmentation or other damage
- CLN: Church Lawton North
- PD: Periodontal Disease
- L: Length
- W: Width
- Th: Thickness
- Diam: Diameter
- M: Mouth diameter
- B: Base diameter
- H: Height
- BB: British Barrows (Greenwell and Rolleston 1877)

## Part 1: Reviews and methodology

### Chapter 1: Introduction

The mortuary practices and burial events of the Early Bronze Age have in the past been understood in simple terms which have been based on antiquarian or out-dated evidence and interpretations. Early Bronze Age burials are widely seen as single burials in round barrows, most often of male individuals. Other assumptions on the status of burials and the development of burial sites have often been based on old osteological data which may be incorrect or inaccurate. Theoretical debate has centred on aspects such as artefact and site biographies and personhood, usually these interpretations are based on artefacts which are not contextualised or referred to associated human remains.

#### 1.1 Aims

The aims of this study are to provide an integrated osteoarchaeological analysis of the burial practices of Early Bronze Age Northern England. Osteoarchaeological analysis will be used to answer the research questions along with the investigation of burial choices and identities in the period. While other researchers use archaeological evidence to inform their osteological assertions, this study works from the smallest details outwards to create an osteologically informed archaeology of burials.

The archaeological analysis will use archives and excavation reports to provide detailed context for the surviving human bone assemblages. Osteological analysis will be carried out to obtain up-to-date information on the human remains from round barrows and cairns, including demographic and mortuary information. The study area for this research will include Derbyshire, Cheshire, Lancashire, Yorkshire and Cumbria which make up three areas: West, East and North.

#### 1.2 Research Questions

- What are the demographics of Bronze Age burial practice?
- Why were different burial processes chosen?
- Are there regional differences in mortuary practice? *Is there a predominant mortuary practice in northern round barrows? Do mortuary practices change or co-occur?*

- How are artefacts significant in Bronze Age burials? *Can artefacts inform our view of Bronze Age people/mortuary rites?*
- Can identity be accessed through osteological and archaeological evidence?

### 1.3 Approaches to the research questions

In order to assess potential problems and the best approaches to answer the research questions, different aspects of the study are first investigated through literature reviews and the methodology. These are explored in chapters 2-6; these different aspects of the research include:

- Past archaeological ideas, including those which developed from antiquarian studies which have at times been based on assumptions not facts.
- The relationship between osteology and archaeology and the potential of these approaches to gain a more detailed understanding of past people and burial practices.
- The creation and definition of identities, and potential ways to access identities in the osteoarchaeological record. This is explored through burial processes and choices.
- Variations and patterns in burial practices in Early Bronze Age Britain and what they might mean.
- The chronology of burial sites and grave-goods; the contextualisation of the sites and individuals is important to differentiate patterns which relate to chronology rather than social variation.

These parts of the background to the thesis are then followed by the methodology (Chapter 7) which first lays out the methods for the assessment of the human remains, followed by the methodology for accessing identity through burial process and choices.

### 1.4 Case studies and Early Bronze Age identities

One of the aims of the PhD is to work from the smallest scale outwards creating an osteologically informed archaeology in order to understand issues of mortuary variability and identity. While the overall results of the study (seen in chapters 8, 9



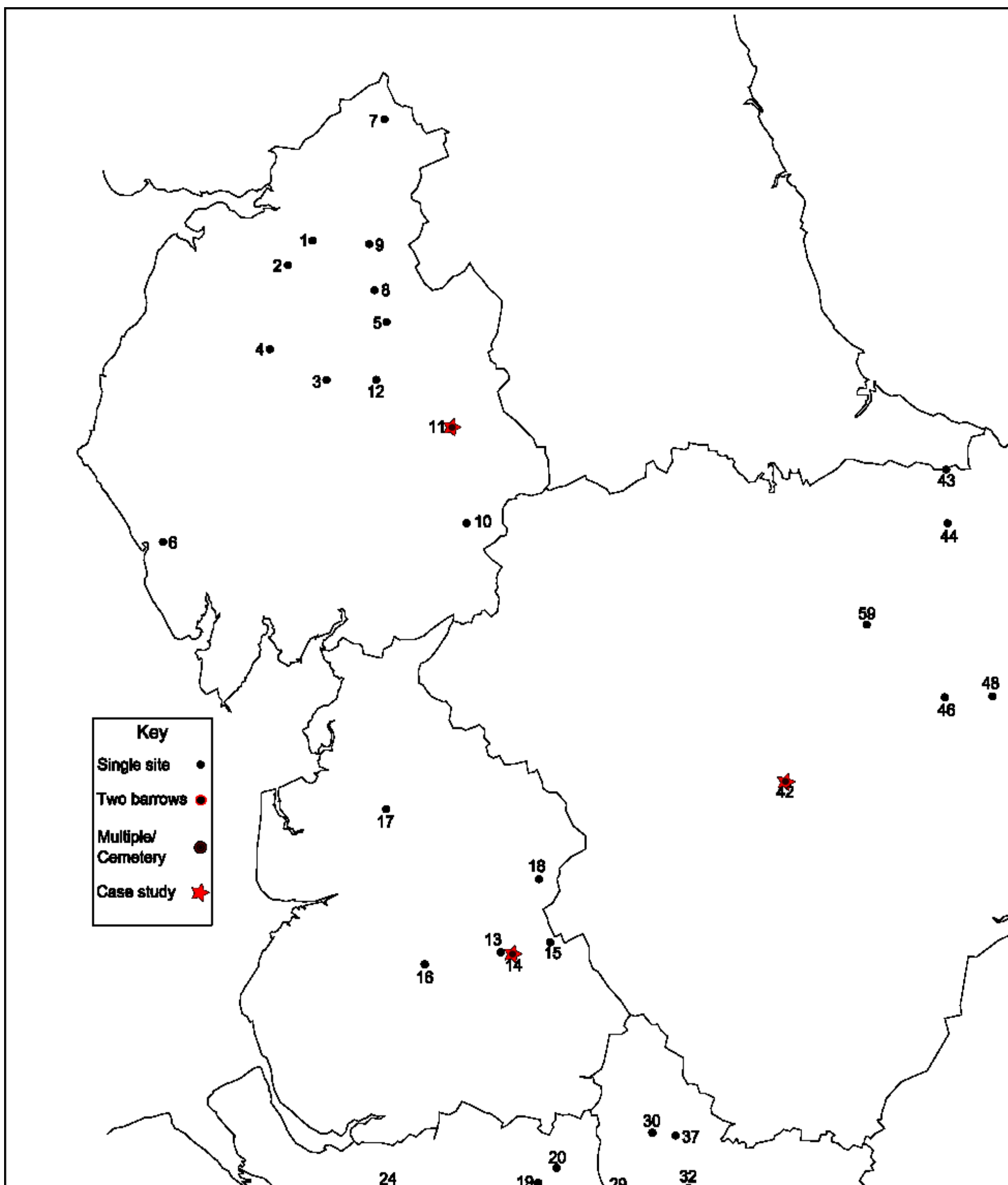
and 10) attempt to resolve questions on a larger scale, the case studies focus in on individuals, their life histories and site biographies. Of the five case studies, four have been radiocarbon dated in order to better understand the chronology of burial and barrow processes. Funding for the radiocarbon dating of four case study sites was obtained through the ORAU/NERC. The processes and chronologies of these sites will be compared to examine regional variation. The case study sites are: Hindlow, Derbyshire; Church Lawton, Cheshire; Whitelow, Lancashire; Green Howe, Yorkshire; and Brackenber, Cumbria.

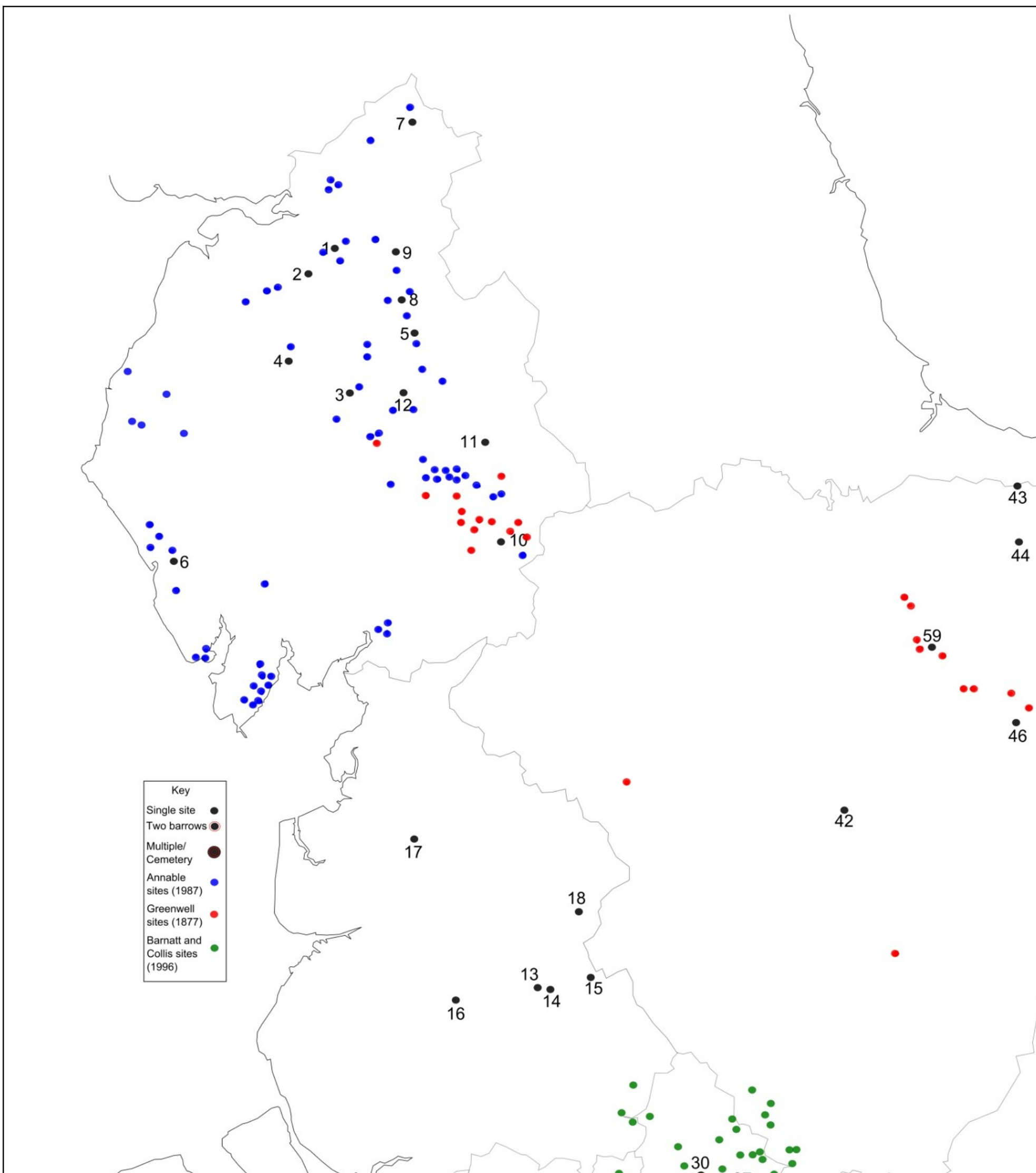
As well as site case studies, individuals are also investigated in order to further discuss different levels of identity. A certain amount of contextual information is used in relation to osteological data. These form a kind of osteoarchaeological narrative which contribute towards the discussion of these individuals socially and how they may relate to other individuals and groups. The osteological evidence from these individuals is used to create an osteoarchaeology of the body.

Potential Early Bronze Age identities are then discussed; these include previous stereotypes of men and women in the past such as warriors and chiefs as well as previously unexplored identities such as family relationships, different occupations and social age groups.

### *1.5 Map of study area and site distribution*

Figure 1 shows the study area as well as the distribution of sites in the study. Figure 2 shows sites in the study area, those in the study and a large number which are outside the study but have been published (Annable 1987; Barnatt and Collis 1996; Greenwell and Rolleston 1877).





## **Chapter 2: Past approaches to Bronze Age mortuary studies: an archaeology of objects?**

### *2.1 Introduction*

From the earliest excavations of antiquarians, to more recent interpretations, artefacts have most often been the focus of archaeological studies of Early Bronze Age mortuary practices. Craniometry was also an early focus of study but this went out of favour with the demise of the culture historic approach. Processual approaches then focused on the cross-cultural analysis of data and economic interpretations. Post-processualist approaches included an increasing interest in interpretative archaeologies drawing on structuralism, agency and personhood.

This section will review these past approaches to consider how the questions they raised, are still influential today. It will assess the problems and limitations of past theoretical paradigms and look at new developments in approaches to the Early Bronze Age. New methodological developments have often been applied to data and questions derived from out-dated paradigms.

### *2.2 Primary burials, chiefs and warriors*

The earliest excavations into Bronze Age mortuary sites were carried out by antiquarians, who were usually focused on finding the primary burial and associated rich artefacts. The idea of the primary burial originated from individuals such as Stukeley, who saw barrows as the burial places of druids or kings (Petersen 1972, 22). Prior to this, medieval thinkers such as John Leland thought round barrows were 'sepultures of men of war' (Ashbee 1960, 16). Later in the early 19<sup>th</sup> century these ideas were continued with the discovery of the rich Wessex barrows by Colt Hoare and Cunnington. The idea of the 'chieftain' became widespread among antiquarians; the theory of human sacrifice was also a popular way to explain secondary or multiple burials (Greenwell and Rolleston 1877, 244). At the end of the 19<sup>th</sup> century, the human sacrifice theory went out of favour (Petersen 1972, 25).

However, the idea of the single-grave as the primary, important burial survived. It provided usable evidence (grave-goods) for chronology and for the diffusion argument

which was an important focus of the culture historical approach (Gilman 1981, 1). This led to attention being focussed on the artefacts rather than the burials or barrows as a whole (Ashbee 1960; Petersen 1972, 23). Although barrows were put into categories according to their external form these never correlated with the contents and so were not useful in this way (Grinsell 1953).

These antiquarian interpretations remain influential. Bronze Age burials are still often thought to be predominantly male individuals, this especially applies to central or 'primary' inhumations; whereas later inhumations or cremations are said to be mainly women and children (Brück 2009). Grave-goods continued to be a focus for early barrow studies until relatively recently as they were seen to indicate rank and status, particularly in the Wessex area (Clarke et al. 1985). This approach was used as a way of accessing hierarchy (Meskell and Preucel 2007, 125). For example, Earle (1991, 9) discusses how Bronze Age ideology involved status identification with foreign objects, especially metals as wealth (Helms 1979).

It is debatable how such objects were viewed in the past and the label of 'prestige' object ignores more recent interpretations such as object biographies and personhood. Value may have depended on the social context such as ritual, or been variable depending on region and time or, associations such as lineage, ancestors and community (Barnatt and Collis 1996, 41).

### *2.3 Craniology, culture history and the beaker people*

As the material culture approach became dominant, barrows and their artefacts were viewed as the visible evidence of the movement of different peoples. The typology and chronology of artefacts were taken to be the most important aspect of these sites as it was thought to provide evidence of the progress of the 'diffusion' of various cultures (Ashbee 1960, 95). Any new artefact type was interpreted as being spread by the invasion of new peoples; these new people were seen as 'founders of our Bronze Age' (Clark 1966). For example, the Wessex culture was thought to result from an invasion of people from Brittany. These rich artefacts included: bronze axes and gold-ornamented daggers, bronze pins and sceptres; as well as objects of gold, faience and amber (Clark 1966, 183; Barrett 1990, 180; Woodward 2000, 101).

Antiquarians had a strong interest in the study of craniological features for the comparison of past peoples. During his excavations, Bateman (1848) noticed that chambered tombs contained dolichocephalic skulls and that round barrows had brachycephalic skulls, but it was Thurnam who first said 'long barrows – long skulls, round barrows – round skulls' (Brodie 1994, 38). Unfortunately at this time it was not known that some round barrows were Neolithic which led to some confusion and misinterpretation. Abercromby (1902) was the first to associate 'round headed' individuals with beakers and this led to the idea of the 'beaker people' (Brodie 1994, 39).

Childe (1933) argued that the cranial index was not a good indication of race as modern racial groups were also dolichocephalic.

*'It is thus obvious that a culture need not correspond to a group allied by physical traits acquired by heredity'* (Childe 1933, 198).

While rejecting a connection between culture and race Childe felt that the beaker people might be an exception (Brodie 1994, 41).

*'In this instance therefore it looks as if culture and race coincided and one might legitimately speak of a beaker race'* (Childe 1939, 218).

Beaker people were also thought to be a different 'racial sub-group' due to other skeletal characteristics, as they were thought to generally be taller and more rugged than previous, Neolithic peoples (Ashbee 1978, 137).

The 'beaker people' are the only culture to still be discussed in this way. It is debateable whether there was an immigrant ethnic group or just an artefact trend, there are various later interpretations ranging from movement and marriage exchange (Brodie 1997) to male warrior drinking culture (Shennan 1982). Brodie's (1994) archaeological and craniological study of 'beaker people' discussed other possible reasons for differences in cranial shape. Brodie supported the idea of a change in cranial shape from the Neolithic to the Early Bronze Age, but proposed an environmental cause. He suggested that changes in diet affected the muscles used for mastication, which resulted in changes to cranial shape (Brodie 1994, 80).

### 2.3.1 Defining beaker burials

Often beaker burials are simply defined as those Late Neolithic or Early Bronze Age burials with a beaker pot or wrist-guard etc. Some studies discuss general Early Bronze Age burials as beaker (Sofaer Deverenski 2002). Thomas (1991) also considers some a-ceramic beaker burials but these are not buried differently to other Early Bronze Age burials. It seems problematic to classify a burial as 'beaker' without criteria to differentiate them from other burials without artefacts from around this time.

Beaker migration was traditionally thought to be indicated by a change in burial practice from Neolithic collective burial monuments (e.g. Hazleton North: Saville 1990) to individual burials in round barrows (Barrett 1994, 51). This change in burial practice was assumed to mirror changes in social structure.

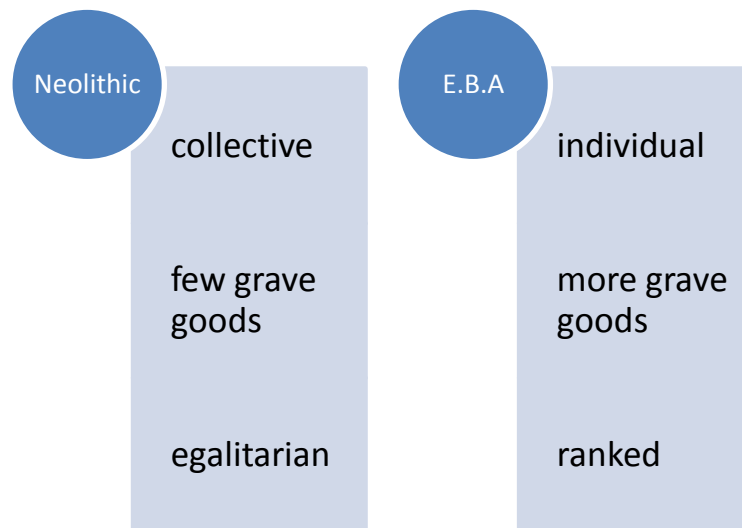


Figure 3: Aspects associated with changes in burial tradition

Recently it has been argued that Neolithic mortuary practices are more complex and diverse than previously thought (Whittle et al. 2007). Brodie (1994) does not see continuity in Neolithic and Bronze Age mortuary practices. Opposing this view, Gibson (2007) argues that burial practices including single/multiple inhumation and cremation were present in both the Neolithic and the Early Bronze Age. Whilst object types offer some broad spectrum dates, further radio-carbon dating would be helpful in resolving this issue. A recent study has undertaken isotopic analysis to solve the question of whether beaker people were incomers from the continent. However, there are currently still no conclusions (Jay and Richards 2007; Jay et al. 2012).

#### *2.4 Processualist approaches to the Bronze Age*

Moving on from culture historical interpretations, the advent of processualism in archaeology saw a need to answer big questions on the scientific, social and economic systems of past peoples. The analysis of hierarchy and economy from artefact evidence was a particular focus in Bronze Age studies. One of the larger issues which processualist approaches sought to overcome was that of social differentiation and rank. Mortuary data from anthropological and ethnographic studies was most often drawn upon. Mortuary variability was seen as a reflection of the social organisation (Barrett 1988, 30). Saxe created a series of hypotheses on the social significance of mortuary practices and the methods to test them statistically (Morris 1991, 47). These were cross-cultural hypotheses which were tested on the Ashanti of West Africa, the Kapauku of New Guinea and the Bontoc Igorof of the Philippines (Parker Pearson 1999, 29). The most well known of Saxe's proposals was hypothesis 8: where the creation of formal kin group cemeteries is caused by competition to access resources. These descent groups would justify their claims through their descent from the dead (Morris 1991, 147). Goldstein later re-tested this hypothesis on 30 ethnographic examples and found that a ritualized mortuary area was a way in which a corporate group would justify their right over resources. Therefore it does not necessarily inform us on social structure but on the connection between claiming resources and ancestor veneration (Parker Pearson 1999, 30).

Saxe's hypotheses on the social significance of mortuary practices were often drawn upon; for example, a person's status was analysed through the amount of objects which they were buried with (Brown 1981, 28; Morris 1991, 47; Parker Pearson 1999, 30).

Shennan (1975, 279) analysed data from Branč, Slovakia, to assess social stratification and hierarchy. Grave goods were correlated with age and sex categories which were compared against burial position, orientation and grave type. Shennan found that 81% of females were buried on the left side and 69% of males were buried on the right side and concluded that the burial side was a reflection of sex. However, 20% of males were buried on their left side. Shennan blamed this discrepancy on the possibility of a bias in the method of sex estimation but did not discuss the methods which were used or the skeletal completeness. Shennan relates some objects to age, for example, small



pots were found with juveniles (although there is no mention of the specific age categories) while normal sized pots were found with adults, and finger rings were only found with males aged 20 or less.

Some grave goods were correlated with age and sex groups but there were also exceptions which may indicate further social distinctions. Following Binford (1971) and Saxe (1970), Shennan argues that further social distinctions indicate a more complex society. This theory is used to investigate the possible number of social positions at Branč (Shennan 1975, 283). The total of artefacts from each burial was used to indicate wealth; individuals with more than 10 units of wealth are defined as 'rich' (Shennan 1975, 285). Shennan saw grave goods as a straight-forward reflection of the status of the deceased. The artefacts were given a 'wealth' score based on the distance and difficulty of obtaining the raw materials and on the time taken in making the object. Shennan found a significant difference in the age-at-death distribution between 'rich' females and other age groups; this was interpreted as evidence for ascribed female status. 'Rich' male burials demonstrated less of a difference but male expressions of wealth were not as distinctive and were more varied. There was no sex difference in 'poor' burials. Shennan does not conclude whether wealth was ascribed or achieved but discusses the different possible scenarios, such as marriage between different groups, and women achieving wealth associated with marriage. Infants with wealth are thought to indicate ascribed status but Shennan assigns sex to the infants based on which side the individual was laid on (Shennan 1975, 284).

Gilman (1981) investigated European evidence for a study on the social stratification of Early Bronze Age groups. He interprets rich child burials of the cemetery at Branč as an example of ascribed and inherited status. An increase in rich female graves in Early Bronze Age Denmark is interpreted as further evidence of ascribed status overcoming achieved status. The emergence of elites is argued by Gilman to have resulted from the development of metallurgy, a specialist skill. He concludes that elites manage groups and control and obtain resources to benefit the group economically.

### *2.5 Post-processualism and Bronze Age mortuary studies*

In earlier studies burial was a simple reflection of the status of the dead; contrastingly, post-processual studies view burial as a reflection of the society. The burial may

reflect the actions of the individuals in control of the mortuary rite and the appearance they wish to give the mourners or other groups (Parker Pearson 1999, 85). Interpretation of grave-goods has also become less simplistic: artefacts may have been made especially for burial or ritual, or may have complex biographies of their own (Brück 2004).

Within early post-processual studies burial was associated with power strategies and the manipulation of the dead by the living, in order to negotiate rank within the society. For example Thorpe and Richards (1984) use anthropological concepts to discuss ranking and prestige goods. They see ranked structure as something which links members in age, seniority or descent from an important ancestor. Within Bronze Age studies, the change from Neolithic communal burial to Bronze Age 'single' burial has been explained as a change in ideology or the 'rise of the individual'; a change to single burial is thought to represent part of a change in worldview or belief (Barrett 1994). However, this interpretation is a generalisation of the burial evidence as Bronze Age burial practice can be varied or more complex in other ways (*refer to Chapter 5*). Despite this approach to burials, post-processualism has also led to an increased focus on non-functional interpretations, individuals, and identities.

### 2.5.1 *Object biographies*

A large change in the way archaeologists interpreted objects was in thinking more about the relationships between people and objects, and the importance of objects in relation to agency; as opposed to objects being merely functional or cultural (Gosden and Marshall 1999, 169). Objects do not exist at only one point in time but develop a history and have meanings through social interactions and these meanings change over time (Kopytoff 1986).

Healy and Harding (2004) carried out an in depth study of the large number of artefacts associated with an adult male burial from Overton Hill. They examined the individual artefacts in detail, for example a boar tusk was dated to c.2890-2460 cal BC and the deceased died around 2200-1920 cal BC. This indicates that the tusk may have been in circulation for some time or been recovered from an archaeological context prior to burial (Healy and Harding 2004, 186). The wide range of artefacts buried with this individual were interpreted as a view of the beliefs of the mourners, which were

also reiterated in the deposit of 185 domestic cattle skulls placed over the cairn (Healy and Harding 2004, 188). Some of the other finds associated with this burial were possibly circulated for some time before deposition and some were more recent and barely used. This provides a good example of an artefact assemblage where some of the objects may have been belongings and gifts (Brück 2004). However, the human remains were barely discussed and this could have contributed to the 'reading' of this burial. For example the artefacts could have been related to musculoskeletal stress markers (MSM) in order to investigate the activities of this individual.

Woodward (2002) carried out a study of fragmentation and use wear of beads and pottery fragments in attempt to investigate biographies. Woodward differentiated between items which were valuables (amber, gold and jet) and those which were more mundane, such as pottery. Pots may have been associated with specific individuals; pottery sherds are regarded as relics of past which are circulated. Beads of amber or jet, due to their rarity are regarded as heirlooms which from the wear marks on the beads may have been passed down through generations. Woodward interprets these worn and used objects as having symbolic significance; however, this is not really a biography, there is no discussion of the history or use of specific examples, and no discussion of whole burials or specific individuals. Lillios (1999, 238) notes that heirlooms may be seen as interference to our understanding of social organisation from the burial record. A life history of an heirloom may include its creation, use, inheritance and deposition; object biographies may reflect how identity is negotiated between individual agents and the wider context (Lillios 1999, 240).

Whilst object biographies are a useful way of accessing the use and histories of specific artefacts, such studies could be taken further if they were integrated into wider contexts of whole sites along with osteobiographies.

### *2.5.2 Structuration theory and barrow biographies*

With post-processualism came an increase in approaches which stepped away slightly from object-centred interpretations. From the work of Bourdieu (1970) structured practices and binary oppositions have been used in attempt to interpret burials and structures (Fitzpatrick 1997; Parker Pearson 1999). Although structuralist theory had been used to interpret the symbolism within artefacts (Hodder 1982), the study of

structuration was seen as a solution to the perceived lack of agency within structuralist theory; this approach has been used in combination with the history or biography of certain round barrows.

Mizoguchi (1993) used structuration theory to interpret burial data from Yorkshire in an investigation of patterns of male and female primary burials. This evidence was used in an attempt to access social structures over time. Mizoguchi interpreted burials as being conducted following certain 'rules' in remembrance of past practices. Mizoguchi also investigated other aspects of burial, such as the direction of the body, by comparing earlier burials with later ones within each site to see if the earliest burials were remembered and referred to by later ones. Mizoguchi analysed 104 central grave-pits in which there were 66 single burials. Mizoguchi (1993, 224) gives examples where specific memories of body position and the age and sex of the primary interment are recalled over time and repeated in the later 'secondary interments'. However, there are several issues with this work: firstly, the examples do not have good contextual information which is required for a defined sequence in order to be certain of the order of the burials. Also the sample is only made up of a small number of sites, and the cited examples are not enough for the pattern to be significant enough to make such a large sweeping statement. For example, of the multiple burials, adult males are the primary burial in only 18 out of 30 cases (refer to table 1 and figure 3) this does not seem to be enough to conclude that male burials were always first. Mizoguchi also looks at the direction of the head and position of the primary and secondary interments. 'The majority show either the same head direction as the first or faced in exactly (or almost exactly) the opposite direction'. There were only 13 out of 15 examples where the head direction of the primary and secondary burials could be identified (Mizoguchi 1993, 226). The burial directions and positions do not seem to correlate as stated and again this sample is too small to make such a large assumption.

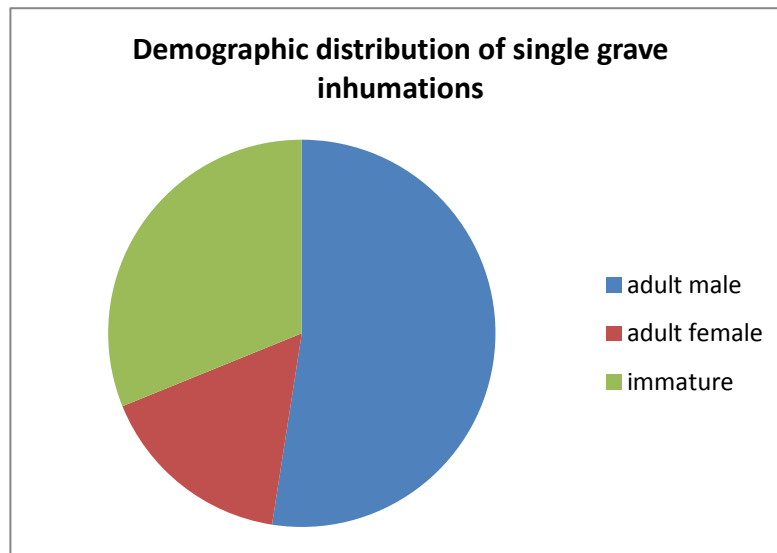


Figure 4: Demographic distribution of Mizoguchi's data (1993)

From the examples Mizoguchi analysed, he concluded that adult males were preferred as primary interments, whereas adult females and juveniles were 'subordinate' and mostly buried in a secondary position. Mizoguchi concluded that the memory of the burial position was related to age and sex which was then recalled when interring the secondary or later burials (Mizoguchi 1993, 227).

It seems possible that some burials may be recalled and returned to (for example at Bee Low, Derbyshire) but it is unlikely that burial position or practice necessarily reflects this.

Single graves	Number	%
Adult male	32	47.80%
Adult female	10	14.90%
Immature	19	28.80%
Cremation - adult male	1	1.50%
Cremation - adult female	1	1.50%
Cremation - immature	3	4.50%
Total	66	

Multiple graves	Number
Inhumations	
Adult male first	18
Adult female first	5
Immature first	2
Cremations	
Cremation first	4

Tables 1a and 1b (right): patterns in burial data from Mizoguchi (1993)

Last (1998, 43) conducted a case a study of Barnack, Cambridgeshire. Like Mizoguchi, he interprets secondary interments as reflecting a memory of the primary rite and also argues that the burial sequence represents a genealogical history of these people and a biography for the site. Identities are seen in this study through similarity and difference. The spatial layout of the site was determined by the first burial; later burials are thought to have been given identity through differences or oppositions to the earlier burials (Last 1998, 49).

One of the problems with these studies is their reliance on previous assumptions about primary burials and secondary burials. Both studies rely on primary burials being central and male and secondary burials being peripheral, this is not always the case. At Deeping St Nicholas the first burial was a three to five year old child (Woodward 2000, 25). At two Cowlam barrows (Greenwell 52 and 53) adult females were buried in the centre (Greenwell and Rolleston 1877). Most significantly, in Yorkshire round barrows often have deep grave-pits which contain numerous successive burials. At Green Howe, North Yorkshire, for example the central grave-pit contained a succession of six individuals, the majority of which were children (Wood 1972). It does not seem likely that the burials can be structured and correlated in a way which is simple and binary. Also without further radiocarbon dates it should not be assumed that the earliest burial activities are generally at the centre of barrows, earlier pre-barrow activities should also be taken into account.

### 2.5.3 Gender

A part of post-processualism's search for individuals in the past has led to the development of a social archaeology centred around discussions of gender and age (Meskell and Preucel 2007). Gendered interpretations arose alongside feminism which led to a concern with the lack of visible women in the past (Gilchrist 1999, 2). Gero and Conkey (1991) criticised archaeologists' projection of gender stereotypes onto their interpretations of gender roles in the past; archaeological interpretations were focussed on men, women were ignored or presumed to be in the background. Gero and Conkey (1991) pointed out that women existed in the past, so the data must also (*Gender will also be discussed in chapter 4*).

Gender has primarily been explored through sexed individuals and grave-goods with relation to the position of artefacts associated with the body, orientation of the body, sex and object typology (Sofaer Derevenski 2002, 191). During excavations of Bronze Age burials, male and female identifications have often been assumed from artefact groups where no bones have survived (Needham and Woodward 2008). Sofaer Deverenski (2002, 191) criticises the underlying assumption that objects define gender identity where mortuary practices have been viewed through the division of males and females. It cannot be assumed that items deposited with the dead belonged to the deceased, and may, as discussed by Brück (2004) have been created specifically for the funerary rite, or have been a gift from mourners. Another problem with viewing grave-goods as a reflection of the deceased's social identity is the emphasis on ownership (Sofaer Deverenski 2002; Brück 2004, 309).

Brück (2009, 4) examined and reinterpreted gender distribution of burial practice in the Early Bronze Age; she used a random sample of literature across Britain of 62 sites excavated since 1960. This included: 16 from Scotland, 13 from the midlands, 16 from southern England and 7 from Wales. This resulted in 544 individuals; 196 inhumed and 348 cremated. Brück found that cremation was the more common burial practice, but that females were more likely to be cremated (however this could be due to a bias in sex assessment; *see Chapter 7*). Brück (2009, 9) also discusses differentiation in the amounts of the cremation deposits as a way of displaying male/female status but concludes that small weights may be indicative of retention of amounts of cremated remains. Females remains were apparently moved further from pyres and males were

found more often in situ with pyre remains (Barnatt 1994, 350; Brück 2009, 11). This is seen as an indication that women are more likely to have been dividual; this is an interpretation of personhood opposite to the modern notion of the individual where a person is made up of the relationships, people and objects which make up their lives (see below and Fowler 2004). This dividuality is then discussed in relation to marriage patterns where women may have moved between groups for marriage (Brück 2009, 14). Women's identities were more fluid due to their being mediators between groups and this is seen as a reflection of the wider variation in women's burials and associated artefacts in comparison to men's (Sofaer Derevenski 2002, 201).

#### 2.5.4 *Childhood*

Alongside the rise in the discussion of women in the past, children have also become more important within interpretations of past groups (Baxter 2005; Joyce 2000). Children have at times been neglected within mortuary studies; this is perhaps because their remains do not always survive (Chamberlain 2000). Baxter (2005, 8) critiques the ways in which children have been discussed in archaeology and cites two main types of study; firstly children have been used to interpret miniature artefacts which may not have been functional; secondly there have been experimental and ethnographic studies relating children's behaviour to archaeological deposits. One of the main problems with childhood is that the definition of the child is varied in different cultures, along with the appropriate social roles and behaviour which go with childhood (Baxter 2005, 1 and see chapter 13).

Within Bronze Age studies children were at times interpreted as evidence of sacrifice (Greenwell and Rolleston 1877) and more recent literature has discussed the roles of children in past societies compared to our own (Montgomery 2009, 61).

The burials of children in the Bronze Age can often be seen within the literature even if the human remains have not survived; for example Greenwell discusses Weaverthorpe where there are a high number of child burials. At Raunds, children account for four out of 12 inhumations and outnumber the inhumations of adult women in the surrounding area (Healy and Harding (2007, 57).

McLaren (2004) discusses a child burial from Doune, Perth and Kinross, Scotland. The child was buried in a short cist and was accompanied by a miniature battle axe, a small food vessel and a fragment of a larger food vessel. Despite the small size of the battle



axe at Doune it may have been a symbolic indicator of status; McLaren (2004, 289) suggests that it could indicate the significance of this individual within the community. The piece of food vessel is identified as a relic with a biography associated with the child's lineage. The individual was around 7 years of age and was dated to 1870-1530 cal BC (McLaren 2004, 291). McLaren's study discovered that 'miniature' battle-axes are mostly found in Scotland and the majority of these were from Shetland. McLaren discusses how the burial process would have been decided by adults in the community which may indicate the social views that adults had towards children (McLaren 2004, 291). Overall McLaren (2004, 301) interprets the burial as evidence of ascribed status, with the grave-goods being material symbols of the child's lineage and the status of the kinship group. Most miniature battle axes do not seem to have been functional and were too large for beads. However, an example from Wilsford G7 barrow (Case 2003, 177) is a jet pendant shaped as a battle axe. McLaren (2004, 197) thinks that the Doune example may have been an amulet due to its quartz inclusions.

Miniatures have sometimes been thought to be 'toys' or childhood objects. Gibson discusses Bronze Age cups from Scotland and other forms of 'miniaturised' objects. Gibson (2004, 273) criticised the interpretation of miniatures as toys, as some smaller objects take longer to make; also small vessels may be due to experimentation. While Gibson discusses possible functional uses and residue analysis of miniature vessels, he does not consider how pottery may relate to aspects of childhood, such as learning and taking part in group activities.

Garwood (2007b, 63) discusses how Bronze Age child burials have been interpreted in a limited way, for example, that they were family members which gave them a right to burial in specific burial places like round barrows due to inherited status. Garwood suggests that the burials of children were special and unusual events. Garwood assesses child burials from Dorset and found that children were represented in different ways in the archaeological record, but that children were largely excluded from funerary practice. However, it is possible that Garwood has not taken taphonomic processes and older excavation techniques into account.

Garwood discusses how early beaker child burials younger than 4 years of age were buried with adults or older children, whereas burials of children aged 4-8 were at times primary burials with artefacts and were organised like adult burials. Garwood

interprets this as a concern with inherited identities and adult roles, and that these are more likely to have been deaths which broke an inherited line (Garwood 2007b, 76). In Garwood's period 2 (2150-1800 BC) child burials are interpreted as being more symbolic, as they are more like offerings or grave-goods (Garwood 2007b, 78). In Garwood's period 3 (1800-1500 BC) child burials are said to be rare and peripheral and thus less important.

Garwood's interpretation of children as grave-goods is problematic, a child burial should not be relegated to a grave-good just because it is buried with an adult. There are various reasons why a child might be buried with an adult, such as timing, or cultural practices. Child burials ought to be interpreted in their own right, not just as an addendum to adult burials. Whilst, as Garwood (2007b, 66) states, the boundary between objects and people can work in both directions; children should be viewed as individuals with their own identities, as well as symbolically referencing other qualities and things.

#### *2.5.5 Personhood and relational identity*

Recent attempts to understand people in the past have turned to the anthropological concept of personhood; an interpretation of identity where persons are permeable or partible and dividual rather than self-contained and individual (Fowler 2004). According to Brück (2004, 307) identity is relational, this means it is created or made from relationships with people, places and things. Personhood is understood in association with other aspects of identity such as gender and age (Fowler 2010, 140). The archaeological evidence used to discuss personhood has varied and includes: bodies (Joyce 2001), objects (Brück 2001; 2006) and transformations through the burial rite (Fowler 2001). In Bronze Age literature, personhood has been related to fragmentation of objects and bodies by purposeful destruction, cremation and removal of fragments; these processes are seen as metaphors for the person being partible and dividual.

Jones (2002, 161) points out the need to be careful not to apply dividual personhood to all non-western societies. Jones discusses the biography of Bronze Age lunulae and jet and amber necklaces; and sees these artefacts as the locus of expression for the creation of relational personhood (Jones 2002, 166). The fragmentation of necklaces

makes them partible to establish links between the living and the dead, lunulae are the opposite in that they are not partible and are also not associated with burials (Jones 2002, 169). Brück (2006) has argued against Bronze Age studies making a definite division between people and objects; and instead considers from how objects may be extensions of the person or reminders of events in the life course. Brück (2006, 78) cites numerous cases where objects have been purposefully fragmented, this is interpreted as evidence of the destruction of objects which were associated with the deceased. The cremation of people is seen as a parallel practice; the low weights of some Bronze Age cremations are interpreted as possible evidence for the curation of parts of individuals which may have been circulated (Brück 2006, 81). The co-mingling of certain Bronze Age inhumations is given the same interpretation.

## *2.6 Conclusions*

A review of past approaches has revealed a lack of progress in Bronze Age mortuary studies, with past focus being on artefacts, craniology and unusual examples of Early Bronze Age individuals such as the Amesbury Archer. Unusual burials such as this have formed the basis of assumptions which have been applied to the Bronze Age in the rest of the UK.

The idea of primary and secondary burials is a self-perpetuating theory which is partially created by an excavation bias: antiquarians were most interested in the central burials; this was where they predominantly dug. This theory cannot stand up under the variety of expressions of Bronze Age mortuary behaviour; a palaeodemography of these burials may add further fuel to challenge this assumption. Unfortunately the primary/secondary burial model has formed an assumed basis for more recent research where the sequence of burials has been related to social structuring of different individuals using a simplistic interpretation of similarity and difference in aspects such as burial position (Mizoguchi 1993; Last 1998).

The processualist approach was focussed on the search for elites through the number and richness of the associated grave-goods in order to make economical and functionalist interpretations. Any rich graves, whether they contain adult males, females, and children, are solely indicative of elites. These elites are defined in purely economic terms; there is no discussion of other aspects, for example the social or

ritual. With this approach kinship and marriage relations are also linked with the development of a prestige goods economy; social and family ties are seen as economic rather than emotional. Overall this approach led to a lack of investigation of the interaction between social life and individuals.

Post-processual approaches include a wider variety of interpretations and become more removed from the previous object-centred approaches, although artefacts have also been central within archaeological interpretations of both gender and age (Sofaer Deverenski 1997). Gender has often been assumed from grave-goods, child burials only seem to be discussed when they are associated with small 'child-like' objects; such burials are usually not discussed in their site context. Although Brück's (2009) gendered consideration of cremation weight is more promising, even in this case cremations are interpreted like artefacts; taphonomic factors should also be taken into account. Cremations are still the remains of people even if they appear to have become 'objectified' to non-osteologists.

Personhood while promising in interpretations of identity is at times applied liberally to interpret differences in burial practice (e.g. cremated remains) without considering the variety of possible reasons for this choice of burial practice. Also this approach is limited by its reliance on the comparison of prehistoric people to anthropological groups (Jones 2002; Fowler 2004). However, Personhood is useful in making us think differently about how past people saw themselves and others around them.

#### *An archaeology of objects?*

Whilst objects have agency, this develops from the interaction of people and things. Objects are more than just functional but the opposite should not be taken to extremes; objects which are often used may have been favourites for the completion of certain tasks, objects may be gifts, offerings or group belongings.

The archaeology of the Early Bronze Age has for the most part been an archaeology of objects.

More recent studies have moved away from objects, but Bronze Age artefacts are still at times discussed outside of their context. Whilst artefacts are important they should not be interpreted within a vacuum, neither should human remains. Bronze Age

archaeology should not be an archaeology of objects, but rather, a contextual archaeology.

## **Chapter 3: Archaeology and Osteology: “a street poorly travelled in both directions”?**

### *3.1 Introduction*

One of the main aims of this project is to integrate both the archaeological and osteological data within an up-to-date theoretical framework. The project will create an osteologically informed archaeology with the emphasis on the human remains and their context as data. Despite the potential advantages to this approach these areas of research have for the most part been separate (examples of exceptions being Knüsel 2002; Gowland 2006, Sofaer 2006b, Stone and Walrath 2006). This is due to the separation in approaches owing to both differences between the UK and US and diverging specialisations.

Archaeology and osteology have often been focused in different directions; osteological analysis can give evidence on a wide range of information including age, sex, non-metric traits, evidence of disease, violence and activity. Archaeology has been more focussed on sites, objects, landscape and theoretical interpretations. Beckett and Robb (2006, 57) have criticised the lack of integration between archaeology and osteology as “a street poorly travelled in both directions”. Their main criticism being that, human remains have been the basis for paradigm changing literature in archaeology (most specifically within Neolithic mortuary studies) but without much actual use or understanding of osteology. At times the osteological evidence has even been completely ignored in such studies.

### *3.2 What’s in a name? Confusion in the orientation of human remains studies*

The study of human remains confusingly may be termed as human osteology, physical anthropology, biological anthropology, forensic anthropology and the most recently popular term, bioarchaeology. Some of these terms reflect differences in specialisations. Originally Clarke (1972) used the term bioarchaeology when discussing faunal remains at Star Carr. Bioarchaeology is a term which has since been used interchangeably with reference to osteology (human and animal) and physical anthropology, but the term may also include study of plant remains, ancient DNA and isotopic analysis. Differences in how the term bioarchaeology, is understood and used within American and UK disciplines means that the term is inconsistently used and

understood. In the UK bioarchaeology is the study of biological remains from archaeological sites; which includes human remains, animal remains and organic material. In America the term is used more narrowly and is more comparable to human osteology in the UK (Knüsel 2010, 64). As, for example, defined by Stojanowski and Schillaci (2006) as the contextual study of human populations using human remains interpreted within archaeological or historical contexts; which includes the study of pathology, demography, dental anthropology, bone chemistry, diet, long bone cross-sectional geometry and genetic variation. Some researchers believe that bioarchaeology is and should be a holistic approach bringing together biological, cultural and contextual evidence in interpretations, (Knudson and Stojanowski 2008; Argawal and Glencross 2011) but others are more sceptical as to whether the archaeological evidence can inform our social interpretations of human remains (Zuckerman and Armelagos 2011).

### *3.3 The importance of integrating disciplines*

Goldstein (2006, 375) has discussed the progress (or lack of) in the integration of physical anthropology and archaeology since the early 1980s. Physical anthropology has followed the science based routes such as DNA, diet, infectious disease and physiological stress. Archaeology has progressed in its consideration of theoretical aspects often drawn from social theory and philosophy; but often without taking the human remains into account.

Most recently as discussed above, bioarchaeology in some research circles is seen as a way of merging osteological evidence in a contextual way with archaeological data, which has resulted in some theoretical interpretations (Gowland 2006; Sofaer 2006a; Stone and Walrath 2006; Sofaer 2011) but at times this type of literature is overly abstruse.

Archaeological approaches, as concluded in chapter 2 can be limited in their interpretations, which are usually object centred in the creation of over-arching theoretical narratives, without consideration of the associated human remains. Whereas osteological interpretations have until recently ignored theory in general or subjects such as gender and other aspects of identity within mortuary analysis (Gellar 2005; Goldstein 2006, 380).

Both approaches are limited in their investigations of aspects of identity as usually only one, such as age or gender, is examined (Díaz-Andreu et al. 2005; Gilchrist 1999). Can approaches which are more scientific or osteology based give an improved interpretation?

### *3.4 Osteological & Science-based approaches*

#### *3.4.1 Approaches to health, disease and demography*

Wood et al. (1992) discussed the problems of selective mortality and hidden heterogeneity in palaeodemography and palaeopathology; this means that not only is the archaeological sample not the same as a living sample, but also, the weakest in each age group are most likely to die. These factors bias any archaeological sample. This means that the frequency of any pathological lesion is not the same as the prevalence of the disease in any population (Milner et al. 2007). Even more problematically for interpretive purposes, in order for palaeopathological indications to be visible on the skeleton, the individual must recover (Ortner 1991). Where lesions are not present on the skeleton, the individual is assumed to be healthy but may have succumbed to illness too quickly for lesions to form. So the hypothesised population is not likely to correspond to the individual pathologies which are visible, as the frailty distribution shifts with age as individuals with the greatest level of frailty are removed from the population (Milner et al. 2008, 586). More recent studies have emphasised problems with the level of data quality caused by various factors including differential deposition, preservation and recovery of the remains (Chamberlain 2000, 102). A further complication is the inaccuracy of some age estimation techniques and under-representation of some age groups when attempting demographic interpretations of archaeological remains (this will be discussed further in Chapter 7). The use of stable, modern demographic models when applied to past populations is thus not likely to be accurate (Cox 2000). Recent discussions of palaeodemography are more positive, although the same problems with modelling seem to remain.

Despite the problems discussed in palaeodemography, there has been a trend within British palaeopathology towards the publication of case studies of individuals or small groups, this has concerned some researchers as population studies have been thought to have more value, especially in North America (Larsen and Walker 2005). A further



concern is the lack of integration of palaeopathological data within its wider context. However, recent studies are contra-indicative as to whether there is any change in this situation (Mays 2012, 192; Park et al. 2010, 497). Park et al. (2010) analyse the nature of research in palaeopathology and conclude that the subject has moved away from individual case studies; Mays (2012) conducted a similar study and concluded that there was still too much emphasis on case studies. Individual case studies are still a useful contribution to the overall record, and an increase in discussion of the archaeological context of these individuals would increase their usefulness.

### *3.4.2 Indications of physiological stress*

Mortality is thought to be influenced through differences in a person's social and economic status, as well as, activities, nutrition, growth and development, and exposure to infections (Milner et al. 2008, 586).

Some palaeopathological lesions are classed as indications of physiological stress; the majority of these are non-specific to any sort of illness. Enamel hypoplasia is one of the most quoted indications of physiological stress discussed in studies of palaeopathology, along with Harris lines, stature, periostitis and cribra orbitalia. Enamel hypoplasia occurs when there is interruption to the development of the tooth enamel (which can be seen as a defect on the tooth) for example due to infection, birth trauma or low birth weight (Hillson 1996; Waldron 2009, 244). Cribra orbitalia is an area of porosity which occurs in the roof of the orbit and may indicate a mineral deficiency or metabolic disorder (Walker et al. 2009). Periostitis is a formation of new bone 'plaque' caused by an inflammation of the periosteum which surrounds the bone; this may be caused by trauma, infections, haemorrhage, nutritional deficiencies or tumours among others (Waldron 2009, 116). These kinds of indications of health are important as they can tell us about episodes of ill-health during the life-course.

Studies of non-specific metabolic stress in childhood are used to support theories of malnutrition in past populations. Less frequently discussed are the specific palaeopathological lesions such as infantile scurvy and rickets (Lewis 2007, 97). Pathologies which indicate physiological stress have been used to interpret status in various studies; usually comparing aspects of burial practice, place and associated artefacts with indications of physiological stress (Robb et al. 2001; Redfern and DeWitte 2011).

Boldsen (2007) conducted a study on LEH in medieval Tirup, Denmark which demonstrated a causal connection between episodes of ill health in childhood (indicated by LEH) and an increased mortality rate in later life. Vercellotti et al. (2011) conducted analysis of the relationship between body size, sex and social status in a medieval Italian population, their findings found a positive correlation between a larger stature and high status male groups. Robb et al. (2001, 220) conducted a wider study which compared funeral treatment with stature, cribra orbitalia, LEH, Schmorl's nodes, trauma and periostitis. Their analysis revealed that individuals with different burial types did not have any difference in health status, but some lower status males had a greater risk of trauma which is likely to be a reflection of activities.

While the use of palaeopathology can greatly increase our understanding of past populations, problematically, general indications of physiological stress may be misunderstood (e.g. periostitis can be caused by a variety of pathologies), some studies have used indications of physiological stress un-critically to make sweeping statements. Härke (1990) attempts to relate Anglo-Saxon weapon burials to health status (and also non-metric traits) but unfortunately assumes a non-metric trait (spina bifida occulta) would cause disability resulting in inability to wield weapons: which is not in fact the case (Aufderheide and Rodriguez-Martin 1998, 61). Härke found a positive correlation between weapon burials and stature, but linear enamel hypoplasia did not correlate. Height may also relate to genetics as well as health which would account for the lack of correlation in LEH which is more indicative of childhood health. Overall approaches to health are useful when limitations such as non-pathognomic lesions and hidden heterogeneity are taken into account.

#### *3.4.3 Activity, Musculoskeletal stress markers and handedness*

Several methods have been used in the past in the study of activity in past populations; these include the study of MSM, cross-sectional geometry, osteometry and the patterning of degenerative joint diseases (Meyer et al. 2011, 203). The study of musculoskeletal stress markers (or MSM) is a way to access the activities of past peoples, the assumption of MSM analysis is that muscle activity causes changes in the appearance of muscle attachments (Capasso et al. 1999). Porčić and Stefanović (2009) compared MSM for activity and social status from grave goods in order to investigate

the social structure of the Early Bronze Age people of Mokrin, Serbia. They found no correlation between status and activities which were being carried out.

One of the problems with the study of MSM for activity is the incorrect assumption that muscles work in isolation to perform a single activity (Stirland 1993, 105). MSM are perhaps best used to discuss patterns of activity but not specific occupations.

Excessive activity may lead to joint degeneration (Molnar et al. 2009). Weiss and Jurmain's (2007, 438) review of the aetiology of osteoarthritis discusses the use of osteoarthritis analysis to reconstruct activities; one possible cause of osteoarthritis to specific joints being repetitive mechanical loading resulting from the continued use of specific muscles and joints for repetitive tasks. The most supported findings relate to age differences. However, other causes of osteoarthritis include: genetics, anatomical variances and mechanical influences. An interesting finding of Weiss and Jurmain's study was that farming activity caused an increased risk of developing osteoarthritis of the hip and possibly also the knee (Weiss and Jurmain 2007, 443). Overall they concluded that osteoarthritis is not an ideal indication of activity, but that it may be more likely to develop when stresses are high in amplitude and begin at an early age, but this must be used with caution as the effects do not apply to all joints or populations. Also sex differences in OA may be anatomical and hormonal rather than cultural. Weiss and Jurmain (2007, 445) note that osteophytes and porosity/pitting are not reliable indicators of OA, whereas articular surface modifications such as eburnation are more reliable.

Molnar et al. (2009) conducted a study of the relationships between MSM, eburnation and age on two Neolithic hunter gatherer populations in Sweden; they did not find a direct link between MSM and eburnation, but found that there was an increase in both of these with age.

Archaeological studies have used OA to indicate activity (Jurmain 1977; Sofaer 2000) but as discussed by Weiss and Jurmain (2007) this can be problematic if assessed without rigour and understanding of how muscle and joint groups function.

Handedness may be assessed from the length and robusticity of the long bones within a skeleton. The side of the dominant hand is inferred from the side which has longer bones in the upper limb.

Steele and Mays (1995) conducted a study of handedness and directional asymmetry on the human remains from Wharram Percy (11<sup>th</sup>-16<sup>th</sup> centuries AD) they concluded that handedness should only be slightly attributed to the effects of mechanical loading. Meyer et al. (2011, 202) discuss the problems within studies of activity, these include: too small a sample size, over-reaching conclusions, and mistaking sexual dimorphism for sexual division of labour. Overall, the analysis of activity can be useful when it is used with caution, for example MSM should be interpreted as actions from muscle groups rather than as a specific occupation.

#### *3.4.4 Isotopic analysis of movement*

In recent years, Isotope analysis has become a high profile method which aims to provide information on diet and movement. The resorption and remodelling of bone lead to different rates of cell turnover in the skeleton; the teeth are formed early in life and are unaltered after eruption. Samples from the teeth demonstrate diet in childhood whereas bone samples will indicate the diet of the last years before death; movement is reflected in the changes between these (Pollard et al. 2007, 188). Another method is the measurement of the strontium ratio which is thought to be characterised by local geology, again movement is seen in the differences in tooth and bone samples (Pollard et al. 2007, 189). However, methods assume no alteration in diagenesis after death (Trickett et al. 2003).

Recent work compares the Boscombe Down individuals with others from the Stonehenge area which shows that these three individuals moved around during their childhood 'in a consistent manner', likely places with the appropriate granites being Scotland, the Lake District, Wales and south-west England, of these, Wales is the closest (Evans et al. 2006, 309; Chenery and Evans 2011, 187). Strontium and oxygen isotopes were analysed to study possible movement. The strontium results demonstrated that the Normanton Down individual had stayed in the same area and was raised in the Stonehenge area. There was difference in the Boscombe Down adults; they seemed to have migrated to this area after the formation of tooth enamel (Evans et al. 2006, 316). The oxygen analysis revealed that all these individuals had levels indicative of British origin.

Evans et al. (2006) and Chenery and Evans (2011, 188) argue that the Boscombe adults may have come from Brittany or Portugal, but it seems more likely that they would

have come from within the areas of appropriate granites named in Britain. Larger studies such as the Beaker People project have not yet settled the wider scale issues of movement which they are attempting to resolve (Jay and Richards 2007).

#### *3.4.5 Isotopic and dental wear analyses of palaeodiet*

Dietary reconstruction is based on carbon and nitrogen ratios in bone collagen which reflects isotopic ratios in the diet. This differentiates between terrestrial and marine proteins as well as terrestrial plants (Pollard et al. 2007, 182). However, there are few published results from Bronze Age individuals. Montgomery et al (2007, 69) found that Early Bronze Age individuals (sample of 11) lived on terrestrial sources and were farming on the Yorkshire Wolds. The Amesbury archer and companion currently undergoing analysis as part of the beaker people project had a mixed diet of meat and dairy products (Evans 2006; Chenery and Evans 2011).

Mahoney (2007) uses dental micro-wear to infer harshness and abrasiveness of diet, with a sample of 14 adult skeletons from EBA sites in Scotland. These were compared to four human groups in the Southern Levant and two human groups from North America. Micro-wear from the EBA burials suggested an abrasive diet with no focus on especially hard foods; Mahoney infers that this indicates a diet rich in plant foods which did not have much reliance on stone grinding (Mahoney 2007, 87).

This study may be problematic in its comparisons to groups which have vastly different climates. Also diets within archaeological peoples may vary according to what foods are available.

#### *3.4.6 Cranio-metrics*

The study of cranial metrics was most popular in the 19<sup>th</sup> and early 20<sup>th</sup> centuries when practitioners were medically trained. Prior to the development of radiocarbon dating, cranio-metrics were used in attempt to find patterns of migration in line with the culture historic approach (Mays 2000, 277). However, the approach then went out of fashion along with culture history. More recent studies suggest that both genetic and non-genetic factors such as environment and diet, influence skull form (Mays 2000, 278). Functional craniometric analyses of ancient Nubian skulls demonstrated that changes in facial reduction were related to dietary shifts and changes in food

production and preparation (Zuckermann and Armelagos 2011, 23). Brodie's (1994) comparison of cranial shape in both Neolithic and Early Bronze Age led to a similar conclusion of the effects of environment and diet on the dentition and cranium. Overall taking measurements of crania may be useful to add to other research but it does not confirm past discussions of invading populations.

#### *3.4.7 Non-metric traits and relatedness*

Non-metric traits are natural variations in the skeleton which have been used in studies of skeletal populations when attempting to find ethnic identities or family groups (Berry and Berry 1972; Coppa et al. 1998; Tyrell 2000, 289; Gowland 2007, 58). There is much confusion in what non-metric traits mean and what they can be used for; also palaeopathological lesions are at times mistakenly classified with non-metric traits and vice versa. When non-metric traits are studied, they have often been recorded inconsistently. Non-metric traits have been used mainly for the determination of biodistance, which is a measure of the relative similarity between skeletal population samples. Biodistance analysis uses specific traits from the cranium or dentition to estimate genetic similarity among regional populations in the reconstruction of migration and gene flow (Stojanowski and Schillaci 2006, 49). Tyrell (2000) discusses the most reliable traits which are structures relating to vascular and neurological systems. Problematically, once dental development is complete the jaws and facial skeleton are subject to powerful stresses. The non-metric traits of the post-cranium are more susceptible to remodelling and functional modification so are even less suitable for analysis (Tyrell 2000, 294). Small changes in environment and loading on the skeleton can also alter heritability (Tyrell 2000, 296). Their polymorphic nature and the possible environmental contribution to their expression means non-metric traits are not useful as measures of relatedness or ethnicity within skeletal populations (Tyrell 2000, 301).

#### *3.4.8 Radiocarbon dating and Bayesian statistics*

Radiocarbon dating using AMS determines the isotope ratio of  $^{14}\text{C}$  compared to the stable isotopes  $^{13}\text{C}/^{12}\text{C}$ . Age is determined from comparison of this ratio to a known standard (Walker 2005, 31).

Within most studies of Bronze Age chronology, charcoal has been the most common material to be radiocarbon dated (as discussed in 6.3). The use of charcoal is problematic as it is difficult to estimate the time between its formation and the archaeological event; also the certainty of the archaeological association is often questionable (Aitken 1990, 87). Charcoal should not be considered the best material for C-14 dating due to these reasons (Lanting et al 2001, 249).

The radiocarbon dating of cremated bone has become possible relatively recently; this is carried out by using structural carbonate rather than bone collagen. Cremated bone is very resistant to external influences due to the recrystallisation, so is a good material for radiocarbon analysis (Lanting et al 2001, 252).

The use of Bayesian statistics for more precise interpretation of dates has been made most prominent recently in the study of the radiocarbon dates from Neolithic Cotswold chambered tombs (Bayliss and Whittle 2007). Bayesian statistics allow for more precise results by adjusting calibrated dates in line with known relationships between samples; this is more accurate with more data (Bayliss et al. 2007, 221). Bayesian analysis presents a distribution of dates called a posterior density estimate. These narrower date ranges are based on probability and are interpretive, not absolute estimates (Buck et al. 1991). The probability changes as more data is added, data can be added repeatedly to revise the most current interpretation (Buck et al. 1991, 808). Bayesian statistics require exact statements to be made regarding the quality of the information (e.g. the stratigraphy) in order to get reliable results (Buck et al. 1991, 819) and this is usually difficult to prove (Reece 1994, 848) as archaeology is interpretative (Hedges 2001, 3). Bayesian analysis requires multiple samples of known context; articulated bone is thought to be most reliable. Where large numbers of dates are used, some were usually obtained in the past using different methods which may cause inaccuracy in the results. New data is analysed in the context of existing knowledge on a problem, this leads to results which incorporate both new and old data (Healy 2012, 145).

### *3.5 Conclusion*

This chapter has attempted to assess the applications and problems with osteological and scientific methods. To return to bioarchaeology; while other researchers use

archaeological evidence to inform their osteological assertions, this study will attempt to work from the smallest details outwards to create an osteologically informed archaeology. As this study aims to bring osteological and burial evidence together for interpretation; the archaeological context is important for understanding the burials as a whole. Archaeological evidence can inform the social interpretation of human remains through the context in which human remains are found and the interrelations between human remains and artefacts, site formations and evidence from the skeleton itself.

The study of health and disease is useful when interpreted with an understanding of its limitations; within this study health will be compared with aspects such as age, sex and artefacts. The study of activity is less useful but within its limitations may be used in interpretation of individual osteobiographies in relation to other aspects such as grave goods.

The study of demography is a wide scale approach to archaeological human remains and more appropriate to more recent populations where large assemblages of well preserved and complete human remains exist. A demographic approach is limited in the analysis and interpretation of British Bronze Age human remains, as these remains are usually incomplete, fragmented and inconsistently excavated and recorded. A traditional style sampling strategy where the same number of individuals and sites are chosen from different areas seriously limits the human remains available for analysis and the questions which this research investigates. In this study, demography is of secondary importance, although it will play a part in the assessment of patterns in sex and health differentiation over both wide and narrow areas. It must also be remembered that these populations are from a wide time scale.

Isotopic analysis will not be used within this study, it is not within the scope of the study and it is not judged to be entirely relevant at this stage, the research questions are not inclusive of movement or diet.

The integration of osteological and archaeological techniques provides more evidence and insight than one of these techniques alone. These will be used along with some radiocarbon dating in order to investigate identity in the British Early Bronze Age.



## **Chapter 4: Identity**

### *4.1 Introduction*

Ideas and approaches to identity most often come from sociology and anthropology. Within archaeological contexts, aspects of identity which have been discussed include; age, gender, ethnicity, kinship, sexuality, ideology, rank and other social roles, for example, warrior, hunter, craft-worker and chieftain (Insoll 2007). Identity is not an easily defined concept, it may be described as sameness, individuality or personality (Insoll 2007) but is generally described as characteristics which are unique and recognisable to every individual. Identity may also be inclusive of animals, things and substances and so is not limited to human beings (Jenkins 1996, 3).

This section will discuss: how identity is thought to be created; individual and collective identity; the visibility of identity through archaeological and osteological approaches; what these processes could mean for osteoarchaeological interpretations and aspects and levels of identity.

### *4.2 How is identity created?*

In anthropology, according to Sökefeld (1999, 417), identity has been understood as basic personality features which are mostly acquired in childhood, beginning with our first processes of socialisation. Recent understanding of learning in childhood acknowledges that cognition and identity develop together at the same pace in our earliest social experiences (Jenkins 1996, 19). This further suggests that identities which are established early in life (self-hood, human-ness, gender and sometimes kinship and ethnicity) are primary identities which are more resilient to change in later life than other identities (Jenkins 1996, 21). Early aspects of identity may be formed in response to expectations expressed by first carers. These earliest forms of identity may set the way in which a person later relates to other people and the world (Gardiner 1981). Once formed, identities have been thought to be quite permanent, though recently various aspects of identity are thought to be more changeable over time and through our 'lifecycles' (Gilchrist 2000). For example, Meskell's (2007, 24) description of social identity is of multiple identities which require constant

reorganisation and negotiation of our relationships with individuals and groups. Meskell also criticises the lack of investigation into the 'inner world' of the individual.

#### *4.3 Individual identity, social identity and personhood*

In the past it has been thought that individual identity and collective identity are separate and different (Jenkins 1996, 14). However, this has recently been questioned; Giddens (1991) argues that self-identity is a recent development, the individual's creation of a personal narrative which allows them to understand themselves as in control of their lives and futures (Jenkins 1996, 13).

The idea of the individual is varied throughout the modern world and so it is likely it would have varied in the past (Insoll 2007, 3). Within his discussion of different kinds of personhood, Fowler (2004, 3) states that the concept of individuals has developed more recently within a modern historical context, which alienates modern people from community and nature, perhaps in opposition to how prehistoric people lived. According to Brück (2004, 308) identity is relational and develops through our relationships and interactions with others. Brück discusses how artefacts were used to comment symbolically on relationships and how relationships are transformed by death. Brück (2004, 313) argues that in the Early Bronze Age objects act as metaphors for the self, around which personhood is constructed.

#### *4.4 Aspects of identity*

Archaeological studies have usually focussed on a single aspect of identity (such as gender) and have attempted to fit past people into modern categories (Meskell 2007, 23). Aspects of identity are not always separable and may be intertwined, for example, age and gender. Age identity changes over the lifecourse, along with the perceptions of gender and the gender roles we are expected to take on which change at various ages (for example mother, grandmother). Evidence of identity has been gathered mostly from artefacts, 'richness' of grave-assemblages and object biographies; but also, burial practices and health (Last 1998; Sofaer 2006; Saruaw 2006).

Aspects of identity including age, sex, gender, ethnicity, kinship and status/rank will now be discussed in order to assess their potential towards this study and within archaeological identity studies more widely.

#### 4.4.1 *Age*

Age is a variable aspect of identity which has rarely been considered in archaeological interpretations (Gowland 2006, 143). Our concepts of age identity are projected from modern perceptions of age groups. Lucy (2005, 43) discusses how modern age identities are social constructions which lead to our projection of modern notions of identity onto past peoples. In addition, there are problems of definition with age groups such as childhood where modern definitions may not be appropriate. In modern times there are age groups which may not have existed in the past; for example, adolescence is an extension of childhood, but in prehistory individuals in this age group may have been seen as adults, with all or some of the responsibilities therein (Montgomery 2009, 204).

From sociological studies, age has been categorised as physiological, chronological or social (Ginn and Arber 1995). Physiological or skeletal age is somewhat constrained from the methodologies which limit our ability to assess age in the over 40s and thus give a false view of the age ranges of past populations (Appleby 2011, 232). Skeletal age reflects biological degeneration and remodelling in each individual and so may vary according to genetic and environmental factors (Appleby 2011, 234). There are also problems of bias from the techniques of age-at-death estimation; the more extreme ends of the age spectrum are under-represented, the very old are often underestimated leading to a majority of young and middle adult individuals. Infants and children are often underestimated due to preservation issues (Chamberlain 2000, 210; Gilchrist 2007, 143). Ways of accounting for preservation biases in this study are discussed in chapter 7.

Chronological age is defined by the number of calendar years a person has lived; this is only really applicable to historic remains where records of the deceased's calendar age survive (Appleby 2010, 149). Social age, being socially constructed is different in every culture and refers to age appropriate behaviour, self perceptions and perceptions of others (Sofaer 2006a, 119). Gowland (2006, 144) discusses how the tripartite age

categories are incorrectly used; biological age in osteological and burial reports tends to be translated into chronological and then social age. Biological terms such as child or adolescent are often taken to indicate social behaviour and norms from modern western society.

Of these different models of age, physiological age is the main source of age for this study and social age may perhaps be visible through the context of certain burials.

Accessing age in a social sense is more problematic; different societies do not always relate biological changes to age identity, age may instead be linked to roles like marriage. Different cultures are not synchronous in what events might be used to indicate a change in age identity (Gowland 2006, 143). Due to this variation in how different groups divide the life course, accessing social age will be more limited. Age as an aspect of identity is often interpreted alone. This is despite the fact that it is connected to changes to a person's identity over the life-course and therefore to other aspects of identity such as gender, sexuality and status. An approach where age can be assessed in relation to these other aspects in a 'lifecourse' style analysis may be more rewarding.

#### 4.4.2 *Gender*

The study of gender in anthropology and archaeology developed from feminist studies, archaeologists were later in the gender debate. Gender is seen as a social construct or performance and to do with the mind, values and ideology (Gatens 2000, 295). It has also been argued that gender is a redundant term where sex and gender are both thought to be inseparable cultural constructions (Sofaer 2006b, 155). Within archaeology gender is generally interpreted as cultural values inscribed on sex categories; gender is usually assumed from sex and artefacts.

Gender has caused tension between osteology and archaeological theorists; osteologists do not always engage in theoretical debate and dislike archaeologists conflating gender with biological sex. Until recently, Osteologists have conducted analyses and assigned age and sex determinations with little consideration of their associated cultural meanings or possible social interpretations (Gellar 2005).

The assumed male/female binary classification has been increasingly questioned (Walrath 2006). Biologically and genetically there are individuals who fall between

these categories, (e.g. Klinefelter syndrome) but they are not accessible in the osteological record, nor are they necessarily assigned to a third gender in modern societies. Some hunter-gatherer societies have a third gender including the Aché and the Itenm'i (Endicott 1999, 414). Among the Inuit the ritual specialist is also a third gender (Guenther 1999, 427).

Gilchrist (1999, 59) discusses the possibility of finding archaeological examples of third gender, and discusses skeletons which have the traits of males or females but have grave goods which are related to the opposite gender, for example, Anglo-Saxon female weapon burials. This argument for accessing such individuals does not take into account that these grave-goods may not have belonged to the deceased or that such objects may relate to more complex identities. Whilst gender may be seen differently in other societies this does not mean that individual burials which are unusual should then be categorised as a different gender. Further integration of analysis of the skeleton such as musculoskeletal stress markers might give further evidence towards this argument. The study of DNA may be of some use to answering these questions in the future.

Previous andro-centric approaches in anthropology and archaeology have been greatly criticised (Conkey and Spector 1998, 13). People in the past had previously only really been discussed as men or 'genderless beings' (Wylie 1991, 32). Andro-centric interpretations have developed from early anthropological studies (which were carried out by men) and evolutionary approaches (Hays-Gilpin and Whitley 1998, 7).

In anthropology the male perspective has been taken to represent the whole group; as archaeology often draws on anthropology for theoretical perspectives, the andro-centric views have permeated archaeological interpretations (Conkey and Spector 1998, 13). It has also been generally accepted that these gender assumptions are continuous throughout cultural and time differences. The biological differences in females have been taken to limit the social roles possible for a woman. This has come from an evolutionary perspective where women are seen to be restricted by pregnancy, childbirth and childcare and this has led, for example, to gendered interpretations of mobility and food gathering.

Distinct sets of qualities have been associated with gender: males have been seen as stronger, more aggressive, more active and more important, whereas females have been seen as passive and weak, this has been transmitted into interpretations of gender roles. Men have typically been discussed as hunters, warriors and chiefs; women as in charge of food preparation, childcare and at times crafts such as potting. Women have also been described as commodities for marriage exchange (Gilman 1981; Brodie 1997; Saruaw 2006). Andro-centric interpretations have been especially prevalent within Bronze Age studies, male burials have been assumed to be chiefs or warriors with women and children only gaining status through male relatives (Gilman 1981; Shennan 1982; Earle 1987).

Some researchers believe that male dominance is unavoidable in hunter-gatherer societies as male hunters share meat, which gains them prestige. This however makes the assumption that meat is always the most valued food-stuff which actually varies in different societies. For example the Batek prefer fruit and female gathering in the !Kung provides 60-80% of the diet (Endicott 1999, 414). Women in different non-western societies are not always confined to gathering foodstuffs. The women of the Agta in the Malibu area of the Phillipines hunt deer and wild pig alongside men and women take part in all the subsistence activities that men do (Estioko-Griffin and Griffin 1981, 124). Women with young children hunt less than teens and older women but only infants are tied to their mothers (Estioko-Griffin and Griffin 1981, 131).

Different gender dimensions include: gender role, gender identity and gender ideology (Conkey and Spector 1998, 24). Gender identity is the individuals feeling of their maleness/femaleness which is unlikely to be accessible in this study; gender role is the behaviours and activities which are gender specific; gender ideology is the meaning of gender within a social context. Gender role seems to be the most accessible, perhaps from artefact associations, pathology and evidence for activity. Gender ideology may also be accessible to a lesser extent as the meanings of gender might be seen through interaction of burials.

Past people have been seen as stereotypes of men and women; however, gender should be investigated rather than assumed from the biological sex of an individual. The assignation of male/female to skeletons does not inform us of the ideals which past societies had of men and women (Hays-Gilpin and Whitley 1998, 4). It seems

possible that gender roles or ideology may be rejected by certain individuals due to a person's identity going against society's impositions or individuals with disabilities or inabilities may take up other roles to compensate. Activities may not be entirely gendered, but may be decided to an extent by individual choice in how they see themselves and by what is needed in the group to perform certain tasks. Social obligations may be formed through reciprocal interpersonal activities within and between groups.

Gender theory can be criticised in the way it deconstructs itself; terminology and differences between sex/gender are torn apart or collapsed to the extent of pointlessness (Sofaer 2006b, 157). Researchers who argue for the redundancy of either sex or gender are usually not associated with osteological work or are unclear on osteological methods and how these may be interpreted archaeologically. While gender should be investigated as a culturally and temporally varied aspect of individuals, gender should also be interpreted as a piece of the whole person who is made up of other aspects. Objects which may be seen as representing gender may be better viewed as indications of other aspects of identity (which may negate gendered interpretations) or as indications of the wider social group.

Conkey and Spector (1998, 21) discuss the potential of investigating the possible importance or power of women in the past as potters, socialisers and organisers of family and economic networks. This seems to be a more promising way of interpreting data on past individuals in a way which incorporates wider social aspects.

#### 4.4.3 Sex

Sex is understood biologically and genetically and is determined through the analysis of certain morphological skeletal features (predominantly the skull and pelvis). For the purposes of this study, sex is defined as biological, male or female.

Sex is something which has been defined as biological and not necessarily reflective of gender; more recently some have argued that sex is a cultural construct (Gilchrist 1999; Meskell 2001). Whilst the deconstruction of something which is a genetic and biological fact seems pointless, it has been argued that the binary view of sex and gender excludes third or fourth genders as well as sex as experience and behaviour (Sørensen 2000, 46). Some researchers have critiqued the use of biological

classifications of male/female, as there are a range of differences between the two classifications. This argument suggests that osteologists arbitrarily decide male/female with no consideration of variability and that this categorisation should be replaced with a spectrum (Sørensen 2000, 46). This argument is flawed in its assumption of how osteologists classify sex differences; sex is assessed using multiple morphological traits and metric measurements, these features are viewed as a spectrum with the 'hyper-male' and 'hyper-female' at each end, all traits are then assessed for what they indicate overall (Buikstra and Ubelaker 1994). Every male and female is varied in the physical expression of sexually dimorphic traits and perhaps the classifications M, M?, F, F? are not enough to describe the variations in the sexual dimorphism of living people, however these classifications work well for the study of sexual dimorphism of human remains, they are also considered with reference to other skeletal information such as age which can affect assessment. The same cannot be said for theoretical discussions of sex.

Biological sex is just one aspect of the data which will be gathered which will be assessed and used along with many others in order to discuss identity. As sexual dimorphism is being analysed from biological data, critiques on sex as a cultural construct are not useful to the study and can be disregarded.

#### *4.4.4 Ethnicity and kinship*

Studies of ethnicity have developed from and are still often associated with culture-historic or artefact centred interpretations; where the movement and identification of 'peoples' is said to be seen in changes in artefact types, such as pots and other decorations (Lucy 2005, 86). This relies on the assumption that artefacts are a stable indication of cultural traits.

Sociologists and anthropologists have suggested that ethnic groups are more of an idea or aspect of social behaviour and relationships which are not fixed or bounded (Jones 1997, 109). Forms of ethnic identity might instead be discussed as local identities, communities or territories (Lucy 2005, 87). In Papua New Guinea, for example, different groups use material culture to express their belonging to specific groups; string bags are elaborately decorated to do this (Lucy 2005, 101).



Within osteological studies, cranial shape and other skeletal traits have been used as an indication of ethnicity in prehistoric populations: the most common example of this being that Neolithic individuals had dolichocephalic crania (or long-narrow heads) and that Bronze Age individuals had brachycephalic crania (round heads). Non-metric traits have also been thought to indicate relatedness, (*see chapter 3*) however this not reliable due to other causes of non-metric traits (e.g. environment and age) and due to the lack of standard recording of these features (Tyrell 2000).

Round barrow cemeteries have been described as genealogical 'maps' where the generations of an extended family group buried their dead (Garwood 1991; Barrett 1994, 123). These cemeteries are in this way a defining lineage in burial over generations (Jones 2008, 179). This idea is interesting but would need to be affirmed with radiocarbon dates.

Kinship may also be relational and include animals, spirits, ancestors and places (Jones 2008). Within Bronze Age burial sites, the earliest burials may be interpreted as relational ancestors who are remembered in stories which are passed down through generations.

Ethnicity is not likely to be visible in the osteoarchaeological evidence so will not be discussed further; while ethnography may be a useful and valid way of drawing comparisons with other populations, it is still limited. If the study of ethnicity was to be taken further in Early Bronze Age studies it is possible that a detailed study of material culture might hint at pointers towards group differences. However, this is beyond the scope of this study and would also be problematic in the assumptions of tying objects to ethnic or group identity. Potential ways of accessing ethnicity through biological means (such as craniology, non-metric traits and isotopic analysis) and the limitations in these techniques are discussed in chapter 3.

#### *4.4.5 Status and rank*

Within archaeology status is generally interpreted from the amount and rarity of objects which are associated with a burial. Shennan (1975) interprets status from grave-goods but artefacts may have been given by mourners, a more complex symbolism is more likely. Within Bronze Age studies it has also often been assumed that central position in round barrows combined with objects also indicates a high

status (Burgess 1980, 175; 324). It is rare to get a large assemblage accompanying one person; such elaborate burials include Bush Barrow and the Amesbury archer.

More recent studies discuss other possible reasons for grave-goods such as gift-giving, metaphor, disposal of polluted objects and forgetting (Brück 2004; King 2004).

'Rich' artefacts in graves are thought to be indicative of social stratification and in the Bronze Age also to the emergence of elites (Babić 2005, 70). Artefacts which have been classified as high status have been focused on to the extent that their associated context and the individual which the objects were buried with are often ignored (Woodward 2002; Sheridan and Davis 2002). Artefacts are likely to have had many meanings of which we can only scratch the surface; they may have been devices for social interaction, or have belonged to groups rather than individuals (refer to chapter 6).

Burial position as an indicator of status is a difficult idea to strongly affirm or negate, for example, it is not known what percentage of Bronze Age populations were buried in round barrows as opposed to other site types such as caves and flat cemeteries, or what the clear time scale is for the use of such sites as some barrow and cairn sites date from the Neolithic. Are all burials in barrows and cairns 'high status'? It seems more likely that there were varied reasons and traditions for the construction and use of different sites. Burial position within round barrows seems unlikely to be related to status as the positions of burials are unpredictable. For example, burials may be within deep pits as at numerous Yorkshire barrows or they may be in shallow scoops on the pre-barrow surface (see chapter 5).

Possible indications of status or rank may include: objects, health, age, gender, sex, position in the barrow, burial rite, position in relation to other burials and the time taken in the burial process. Health or osteological status (as discussed by Robb et al. 2001) may be seen through stature, linear enamel hypoplasia, cribra orbitalia, fractures, disabilities, and other illnesses. Objects with a burial may indicate status relating to: activities, gender, age and perceptions of the person by the individual or others. Age status may be accrued at different age transitions, for example, old age may indicate knowledge and wisdom which may be seen through the accumulation of objects. Activity or occupational status may be seen through MSM and objects. Many

different kinds of data can inform us about different types of status; artefacts should not be seen as the sole representation of status.

#### 4.4.6 *Can we access these identities?*

To conclude, these different and separate aspects which have been used to describe identity are themselves lacking in value as they do not encourage an interpretation of identity which is inclusive and overlapping of different identities. The aspects which are deemed of use to this study are; gender, age and status. The other aspects are either not accessible or are beyond the reach of this study. However, if the separate aspects which are currently used in describing identities are problematic, what could be used instead?

Aspects of identity have generally been interpreted in a way which is singular and static, where one view of a small part is what makes identities, instead of a continuing process of different connected aspects which is fluid and changing throughout the lifecourse.

Different forms of identity have often been understood through binary oppositions, for example; agency vs. structure, the individual vs. the social or the self vs. other. These things are defined by their opposites and lead to a very black and white view which cannot explain uncertainty or change (Hockey and James 2003, 13). Within archaeology this can be seen within studies which attempt to differentiate between identities, using similarity and difference. This is particularly noticeable in studies of burial sequences within round barrows (Mizoguchi 1993; Last 1998) where later burials over time are thought to be referencing earlier burials. This is inferred from the similarities in aspects of the mortuary process such as position and direction of the body. It may be debatable whether we, as archaeologists or osteologists, can access enough information to do more than this.

Within social theory, Jenkins (1996, 4) and, Hockey and James (2003, 13) criticise this structured duality as a 'snap-shot' of something which is really a process, working on many levels by thoughts or actions. Jenkins (1996) suggests creating a synthesis between the two opposites, understanding identity as a process of being or becoming so a person's identities are never final. This means that identity may be understood as a flexible, changing process of events which occur over the lifecourse.

#### *4.5 Are processes of identity visible in the osteoarchaeological record?*

Osteologically visible processes could include, age and the life course and events which affect the body such as illness, trauma and activities.

In an analysis of skeletons and grave-goods from Iron Age Italy, Robb et al. (2001) attempted to access social and biological status through indicators of physiological stress (enamel hypoplasia, stature and cribra orbitalia) and activity and stress in adult life (trauma and periostitis). These pathologies were analysed statistically in conjunction with the accompanying grave goods in order to differentiate social status. Childhood stress, stature and cribra orbitalia showed no difference between grave-good defined groups. Men with no grave goods had the highest rates of Schmorl's nodes, tibial periostitis and trauma, but all but one of these 13 individuals came from the same cemetery. Overall, Robb et al. (2001, 220) found no direct correspondence between burial treatment and biological status, but concluded that there was more to be learned from both skeletal evidence and archaeological evidence.

Archaeologically visible identity processes may include; the mortuary process, gender roles and status (though these are all highly debatable). In the past it was thought that ethnicity and status could be seen from the artefacts associated with burials, more recently interpretative approaches to artefacts have focussed on more complex and subtle ideas such as object biographies and relational identity.

Osteologically visible identity processes could be argued to represent the deceased in a biological sense. Archaeologically visible processes may be said to be more obviously representative of the mourners and perhaps their relationships with the dead, as they are the active participants in the mortuary rite (Parker Pearson 2000). However, Sørensen (2009, 111) has discussed how the dead can affect the behaviour of the living and in this way manipulate the mourners and have power over the mortuary rite, the bereaved are 'moved to move' (Sheets-Johnstone 1999, 275).

In the past, grave goods and the complexity of the mortuary rite have been seen purely as a reflection of the deceased's social identity but this view is problematic as the funeral rite may be a distorted, idealised representation of the deceased (Parker

Pearson 1999, 4) and it puts an emphasis on ownership of the artefacts which may be oversimplified (Brück 2004, 309).

According to Barrett (1994) artefacts accompanying the deceased can be split into three categories

- Decorative artefacts which were attached to the corpse
- Material put into the grave around the corpse
- Material deposited by mourners

Alternatively artefacts may have been made for the mortuary rite, or as gifts from the living. At Bedd Branwen, urned cremation burial H urn was deposited with jet and amber beads which were unburnt and near the mouth of the urn, further into the deposit was one bone bead which was heat affected and so probably worn by the corpse (Brück 2004, 314). This suggests that the jet and amber beads were given as gifts.

Identity processes could perhaps be said to be found in at least three categories:

- Life events
- Death
- Burial

A fourth category may also be seen in post-burial manipulation where burials have been disturbed, moved or altered, sometimes for the insertion of a newer burial.

It is rare for any skeletal evidence of death to survive over such a time, skeletal remains often yield the least evidence as to the cause of death, even in modern cases. Aspects of the circumstances around death (negative/positive) might be seen in the burial, but again this is rare (Aspöck 2008, 22). The most promising categories are life events and burial processes, these processes are made up of all the choices that make a burial. Post-burial manipulation would include any activity which would indicate that burials were disturbed by the removal of bones or the insertion of another burial. This sort of process is also limited in that it requires certain stratigraphic relationships or well dated evidence.

#### 4.6 Levels of identity

Identity is not something which can be understood through simple binary opposites, it is not for example, A or B but is more complex and can be understood as multiple interwoven levels or parts which make up an identity (Hockey and James 2003, 13). For example, the individual identity and all the parts which make this person also fit within a family or group identity which in turn fits into a larger area associated identity.

#### **Individual ←family → group →area/region**

Aspects of identity make up multiple layers which fit within each other like parts of a web. Multiple layers are interconnected and interwoven. Multiple aspects of identity may make up one person, one age set or gender group, or one group or community. An age related identity will fit within other different aspects such as gender or sex. Male and female individuals can be within the same group identity whilst simultaneously being separate in terms of:

- (1) Biological differences – male/female
- (2) Age such as infant or older adult
- (3) Status
- (4) Health

Certain identities are gendered, so an aspect such as a warrior or chief has been seen as a male identity, whereas females have been associated with being mothers, potters or perhaps craft persons working with beads, textiles and animal skins etc. An identity which relates to a skill is something learned to the extent that it becomes instinctive. The majority of 'skill' identities could be male or female, old or young within the group. Many of these identities could be applied to both males and/or females, it is our perceptions of gender roles through history which have ascribed certain roles to men or women.

Some identities are not split by gender or age; this would apply to the group identity where gender and age identities are combined within the community or family which may further relate to a group lineage or ancestry which could be genetic or relational.

**Group → belonging and affiliation →community, family →lineage/ancestry→ genetic or relational**

Identities may be constrained and controlled as perhaps may be seen within European Bronze Age cemeteries where patterns of burials with grave goods are associated with similar gender and age groups, for example at Tiszalpolgár-Basatanya, Hungary (Sofaer Deverenski 1997) and Franzhausen I, Austria (Appleby 2011). Identities may also be loose or flexible and interchangeable which would be a more likely interpretation of British Bronze Age burials.

#### *4.7 Conclusion*

Identities are complex and interwoven from different aspects which may fit within other levels of identity. Identities may be accessed through a series of processes, both archaeological and osteological. This series of processes can be seen through individual skeletons, and the choices and events which can be seen in each burial. Different aspects of identity may be accessible from the human remains and the burial process. Identities may be seen through the choices which are made throughout the burial process (see chapter 7). Identities seen in burial are most likely to reflect the feelings and views of the mourners toward the dead. However, aspects of the deceased's identity may be viewed through osteological evidence.

Burial choices may be been the work of the individual, choices may also have been made by the group to which the dead belonged. Some parts of burial process may have been socially and culturally expected and adhered to.

### ***Osteobiography 1: Folkton barrow 71***

Subject 1, a young adult female from Folkton (Greenwell barrow 71), was aged around 16-20 when she died. She was small at 5'2"-5'4" (156cm) tall, but within the average height range for her contemporaries.

During her early childhood, when she was between 18 months and 2.5 years old, she had suffered some physiological stress which can be seen in a dental defect. This may have occurred as a result of weaning or local insult to that tooth but it did not lead to any long term illness.

Subject 1 was a young individual but was biologically fully adult and was a new adult in terms of the social age ranges suggested in part 4. She was certainly old enough to have had children. She had suffered an episode of malnutrition a relatively short time before she died. This can be seen from cribra orbitalia lesions which had begun to heal prior to death. The orbital lesions meant she had a period of malnutrition which may have been caused by multiple deficiencies; when an individual has a deficiency this affects the uptake of other nutrients (Walker et al. 2009, 116). Malnutrition would have led to dysfunctions of the woman's immune system which can allow infectious diseases to thrive (Beisel 1996). It is possible that she did not fully recover from whatever ailment caused the lesions and this eventually led to her death.

Around the time of her death cut-marks were made on her skull, possibly with a flint knife; perhaps she was being prepared for surgery or ritual trepanation before she died. Alternatively, this may have been part of the ritual around her death.

She was still young when she died and her potential to the group would have been mourned as well as herself. Subject 1 was buried 2.74m south west of the barrow centre, in an oval grave which had previously been used for the burial of an older adult man. This was mostly filled with chalk. She was laid on her right side with her head to the south and her hands were placed near her face (Kinnes and Longworth 1985, 79). Flat pieces of chalk were placed around her grave. The chalk may have been used as part of the display of her burial and for the protection of the dead and the living.

When it was time for her burial she was placed into the grave-pit; she was the last person to be buried in this particular grave. She had been prepared for her burial; objects which may have been her favourites or gifts from her mourners were used to adorn her body. This included beads, which may have been part of a bracelet, on her



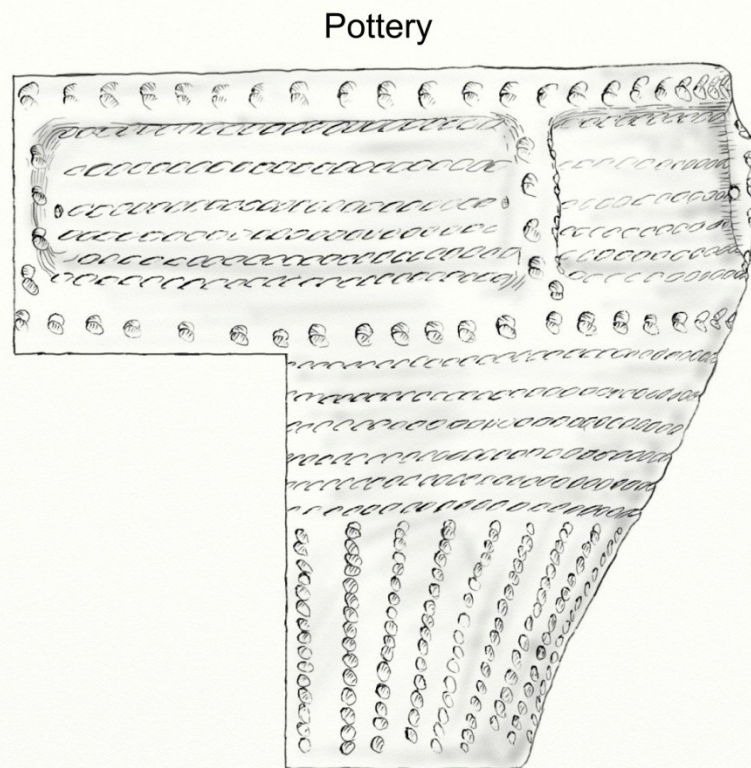
arm or wrist. The bronze awl was also placed with her, perhaps as a symbol of her skills, potential or status, or it may have fallen from her clothing after burial. In front of her face was a food vessel which had knot impressions, horizontal whipped cord patterns, and six horizontally perforated lugs. The food vessel could have contained food or drink; it is also likely that the pot had other socio-cultural meanings.

In front of her hips was placed the foreleg of a pig and part of a goat or sheep, these were probably joints of meat which may have been food offerings, or symbolic representations of the group's livelihood. A round flint scraper was also placed near her head and was probably used to process animal hides (see figure 5 for objects).

As she did not get to live out her life and full potential all these items which were placed with her may have been seen as inalienable objects which could not be passed on to other individuals for continued use.

The other people buried in this barrow included one adolescent and three older adult males subject 1 is the only definite female from this grave. As she was last into the grave-pit, perhaps it had fulfilled its use, or her death may have been the last of a certain identity. Other individuals interred in the pit may have been remembered through folklore and she may have related to them in some way. Alternatively, the mourners may have related her to these past individuals through the circumstances of her death.

## Folkton 71



Bronze awl:  
L.3.9cm, W.0.2cm,  
Th.0.2cm.

Pot: M.15.5cm,  
H.12.4cm, B.9.0cm.

Flint: L.3.4cm,  
W.3.0cm,  
Th.1.0cm.

Beads: L.1.5cm,  
W.1.3cm, Th.0.9cm;  
except bottom  
right: L.1.9cm,  
W.1.3cm, Th.0.9cm

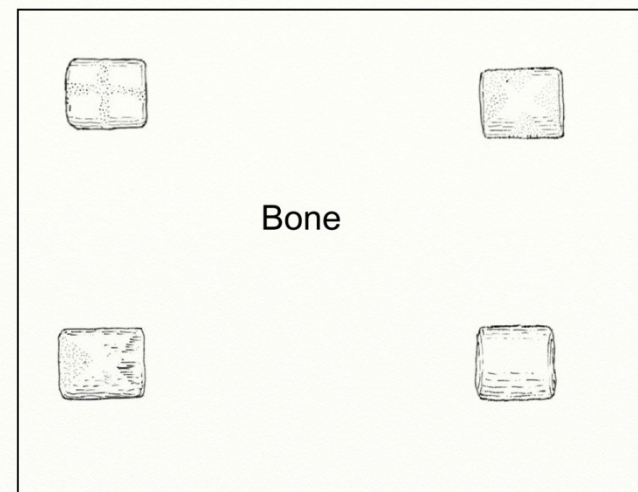


Figure 5: Objects associated with individual Folkton 180, barrow 71, burial 6 (after Kinnes and Longworth 1985).

## Chapter 5: Bronze Age burial practices and places for the dead

### 5.1 Introduction

In the Early Bronze Age, there was great diversity in the ways the dead were treated, and in the places they were buried. Bodies were usually inhumed or cremated, individually or in groups of two or more. Human remains were placed on the ground prior to barrow construction; or within graves, pits or structures during various phases of barrow activity. The bodies were often contained within wooden coffins, shrouds, urns or stone cists. Places of burial included barrows, cairns, non-monumental flat cemeteries, as isolated burials and, in caves. The phases and construction of barrows and cairns were often quite complex. These mortuary practices and places are discussed below. Inhumation is thought to have been more common in the Earliest Bronze Age c.2200-1800 BC with cremation being dominant from c.1800-1500 BC. However there is overlap in the preference of these burial rites, and also occurrences of these burial practices outside of the norm (Barrett 1994, 125; Last 2007a; Garwood 2007a, 41).

### 5.2. Treatment of inhumations

Where preservation has been sufficient it is possible to demonstrate that the bodies underwent preparation before burial. Materials found with some skeletons demonstrate that the mortuary rite may have been complex with the body undergoing processes of wrapping and containment. Bodies were in some cases placed on layers of organic material; these burials were often elaborately prepared. These processes occurred before burial and during the mortuary rite. In many cases where preservation of these organics is good, the bones are badly preserved (for example at Loose Howe, Yorkshire).

Whether the body is placed in a grave, a type of coffin or on the ground surface, the dead were often placed upon layers of organic material; examples include reeds and rushes at Loose How, straw at Bishops Waltham and moss at Amesbury G85. More recently, Tipping (1994) conducted pollen analysis from the fills and floors of four recently excavated Bronze Age burial cairns in Scotland: Loanleven, Beech Hill House, Sketewan (all Perthshire, east Scotland) and Sandfjold (Orkney). The common characteristic was the amount of *Filipendula* (meadowsweet) which was on the cist

floors at Sketewan and Loanleven. It was found that at most sites the pollen closely related to areas of dark staining on cist floors, thought to be decayed plant matter. At Loanleven the dark stain had an 'anthropomorphic' shape and may have been from vegetation around or under the body. Also at Fan Foel cairn, (Carmarthenshire, Wales) meadowsweet was found with the central cremation burial (<http://www.cambria.org.uk/projects/fanfoel.htm> accessed 18/08/2010; Hughes in prep). It has been argued previously that pollen found at burial sites may not have represented flowers or may have blown in, but recently at Forteviot parts of meadowsweet flower heads were found in a burial cist (Noble and Brophy 2011, 798). Pollen analysis of the coffin area at Seafeld West, near Inverness indicated the presence of bracken fronds which might have been over or around the body (Cressey and Sheridan 2003, 52). A face covering has also been suggested by the remains of carbonised wood at Cairnpaple (Ashbee 1960, 93). Plants may have been placed for appearance, scent or for other associations or qualities of a ritual nature.

Evidence of textiles has been found with inhumations and cremations at Kellythorpe cist, Yorkshire and at Manton, Wiltshire the cloth extended above the head of the deceased. At Loose Howe, Yorkshire a waterlogged coffin burial was wrapped in linen and a foot wrapping and shoe were also found (Ashbee 1960, 91). At Amesbury barrow 58 a dagger with the main burial was wrapped in moss and cloth (Ashbee 1985, 69).

At King-barrow, Dorset, deer-skins were neatly sewn together wrapped around the body several times (Ashbee 1960, 88). Gristhorpe man, Yorkshire was wrapped in an animal hide which was fastened at the chest with a bone pin (72mm long) which was made from a pig fibula (Melton et al. 2010, 805). Also among the plant remains in the coffin was a fox metatarsal and phalanges of a pine marten; these remains may be all that remains of furs as paws are usually kept with the pelt when an animal is skinned (Melton et al. 2010, 808).

Some burials have undergone a combination of these processes, for example, at Shuttlestone, Derbyshire, a contracted inhumation was wrapped in an animal-hide and surrounded by ferns within a rock-cut grave (Barnatt and Collis 1996, 28). These kinds of evidence all indicate distinct processes of preparation for the burial, including the

dressing and wrapping of the body, the creation of plant beds for the burial and also the deposition of plants for funeral or symbolic purposes.

### 5.2.1 *Burial position*

Burials are found in contracted, flexed and extended positions; however contracted burials are often mistakenly recorded as flexed. Contraction is when the knees are brought up to around the chin, the resultant angle of the spine being 90° or less, flexion is when the spine is at more than a right angle, extension is when the spine and legs are in a line. Contracted or flexed inhumations are usually on their side and extended inhumations are usually supine (Ashbee 1960, 69). The term crouched is often used to describe flexed or contracted burials, but will not be used in this work as it is not specific enough in describing the burial position.

Usually Early Bronze Age skeletons are found in a flexed position on either the left or right side, with rarer occurrences of skeletons in extended and supine position. It has been thought that there are patterns of right/left: male/female burial in certain regions, but this has been generalised (Thomas 1991; Jones 2008). The most common position of the head is said by Mortimer (1905) to be towards the west and east, although there are examples of the head facing all directions.

Mortimer (1905) discusses the position of hands; positions include: in front of the face, at the neck, underneath the head, crossed over the chest or stomach, at the knees or hips, and extended down the side or out from the body. The hands are positioned in ways which could occur naturally during sleep.

Tuckwell's (1975, 99) study of burial orientation patterns used a large sample of 636 burials using archaeological burial data from the work of Greenwell (1877) and Mortimer (1905) in Yorkshire. The most significant finding in this study is that of the beaker burial orientations in Yorkshire, of which 83% were oriented on an East-West axis and were also facing south. Generally, in Tuckwell's beaker sample, males were buried on their left side, oriented east and looking south; females were buried on their right side, orientated to the west and also looking south. However, Tuckwell's sample of burials associated with food vessels did not reveal a clear pattern in any orientation (Tuckwell 1975, 114). As this project is mostly comprised of burials which are

associated with food vessels over a wider area it seems likely that such a pattern will not be revealed through this research.

Tuckwell's (1975) method is not used in this study as this project was looking at both inhumations and cremations; it is extremely rare to be able to identify the position of the body in the pyre after cremation. This project uses methods which as far as possible are applicable to both kinds of burial process.

Overall the position of the body is most often flexed on the side, usually in positions which reflect sleep.

### 5.2.2 *Graves, coffins and cists*

Burials are often laid on the ground surface before the barrow is constructed; sometimes graves are dug into the ground (Ashbee 1960, 9; Petersen 1972, 26) or into the barrow. For example, at Frampton, Dorset, for the central inhumation the body was placed on the surface and four disarticulated individuals were in the ditch fill which suggests that the barrow was not constructed until after these burials were placed and the ditch had filled (Petersen 1972, 33). Similarly, at Garton Slack 112, Yorkshire three children were individually inhumed in hollows within a ring ditch, each associated with a bone skewer pin, before a mound was raised over a central unaccompanied double inhumation of an adult and child (Brodie 1994, 22).

At some barrow sites, burials occur sequentially in deep pit graves, this is especially seen in Yorkshire for example at Cowlam 2 and at Green Howe.

Bodies are sometimes buried within coffins made of timber or wicker, in some cases the coffins are 'boat-shaped' (Ashbee 1960, 70). A boat-shaped coffin, its lid and a canoe were found at Loose Howe (Grinsell 1940, 365). A good example of coffin burial was found at Gristhorpe, this was exceptionally well preserved due to the waterlogged conditions. The man within the coffin was wrapped within an animal skin which was fastened at the chest with a bone pin (Ashbee 1960, 88; Melton et al. in prep). At Wetwang Slack barrow B, two inhumations and a cremation were buried in wooden coffins/containers and two other inhumations also appear to have been (Dent 1979, 25). Other examples include Swarkeston, Derbyshire (Greenfield 1960); Hove, Sussex; Bishops Waltham, Hampshire (Ashbee 1960, 89).

Placing the body on a wooden plank or 'bier' may be analogous to placing the body on a layer of organic material; examples include Amesbury G.15, Wiltshire and Barnby Howes, Yorkshire (Ashbee 1960, 92).

In areas where composite barrows and cairns are usual, bodies are often buried within cists made from stone-slabs (Ashbee 1960, 70) these have been found in flat cemeteries as well as barrows and cairns. At Bee Low, Derbyshire, there were four cists, one of which contained four individuals (Marsden 1970). A cist at Roystone Grange, Derbyshire, round cairn contained an inhumation and later cremation (Hodges et al. 1989). In Somerset, Burrington 1 had a stone cist of Old Red Sandstone blocks within a cairn and was associated with a Bronze Age cremation cemetery. In the same county Tynings Farm North barrow had three cists within pits which were covered with an earthen mound (J.Lewis 2007, 77). Burials in cists were also found at Ewanrigg and Hardendale Nab, Cumbria (Bewley et al. 1992; Howard-Davis and Williams 2005).

Graves are at times also cut into the bedrock; this can be seen in Derbyshire including Smerrill Moor, Low Moor, Harland Edge and Shuttlestone; although record of these is usually antiquarian and not detailed (Barnatt and Collis 1996, 28).

Mortuary houses are commonly discussed at Neolithic mortuary sites, similar structures (whether they are mortuary houses or not) are also found at Bronze Age barrow sites, although it is likely that some of these are of Neolithic date. At Deeping St Nicholas, Lincolnshire the earliest activity included the construction of a trapezoid timber structure 11 by 5 metres in size (see figure 6) it has been suggested that this was a mortuary house (Woodward 2000, 25). A child burial at this site was enclosed within a series of concentric stake-circles (French 1994, 24).

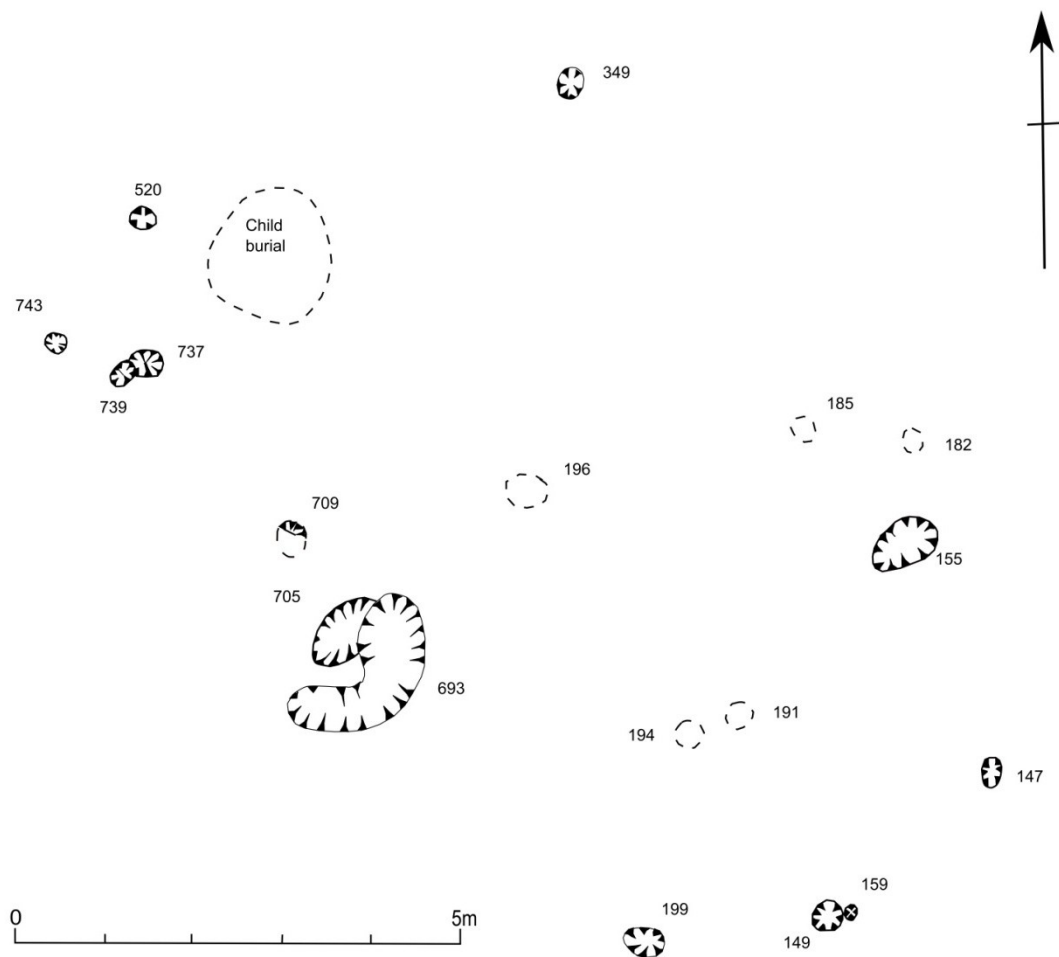


Figure 6: Plan of post-hole structure at Deeping St Nicholas (after French 1994).

At Wrongworthy Cross, Devon there was a mortuary structure made of timber which was 0.9 m high and 1.5 m long (Ashbee 1960, 52). At Church Lawton South, Cheshire, was a roughly rectangular structure made of turf and daub in the centre of the barrow which was interpreted as a mortuary house. One fragment of cremated scapula was recovered from this structure (McNeil 1982, 48).

The placement and containment of bodies in the Early Bronze Age varies from basic burial on the ground surface or in a slight scoop to more complex burial within wooden coffins or stone and rock-cut cists. These all reflect a desire to contain the body, similar to the organic wrappings discussed earlier. It is possible that the construction of mortuary houses shows the early part of this concern with the shielding of the body through to the wrapping and enclosing of bodies through the use of coffins, cists and other materials.



### 5.3 *Excarnation and secondary burial processes*

Excarnation is more commonly discussed in Neolithic mortuary literature, but is at times an interpretation of Bronze Age mortuary practice. At Newborough, Northumberland, a grave contained what appeared to have been a contracted inhumation but analysis showed that only the lower part of the body was represented (Gibson 2007, 56). At Treiorwerth and Bedd Branwen, Anglesey the only bones present were children's ear bones which perhaps demonstrates purposeful selection (Gibson 2007, 58). It seems more likely that these sites were the temporary resting place of the dead at which point the ear bones may have fallen out. At Seafeld West, Lothian a truncated pit grave contained the remains of an adult which had cut-marks on the skull (Cressey and Sheridan 2003, 47).

Cremation is another mortuary practice with more than one stage. The body is cremated, this may not be first stage as body may be fleshed or de-fleshed at cremation, the bones are then usually retrieved and then may be deposited in a variety of ways. Cremation implies more than the burning of a corpse on a pyre. As a technological process, pyre construction and the performances leading up to and after the cremation may differ depending on the circumstances (such as place, event and time) of death. The process is complex and may have lasted for some time before the body is burnt on the pyre (Downes 1999; Duffy and McGregor 2008).

At Snail Down, site XVI was interpreted as a mortuary enclosure for corpses/cremated bones. Three pits contained token cremations which may indicate three instances of storage (Thomas 2005, 283). However, 'token' cremations occur elsewhere without discussion of secondary burial, these may represent purposeful small deposits instead of residue.

At Aber Camddwr ring cairn, Cardiganshire a child was incompletely burnt in situ. The child is thought to have been disarticulated prior to partial cremation on an oak plank (Brittain 2007, 146).

Taphonomically, patterns of fractures and cracks on cremated bone have been thought to indicate whether the bones were fleshed or not prior to cremation (Buikstra and Swegle 1989). Early experiments by Baby (1954) and Binford (1963) helped to demonstrate differences in cremated bones which were dry or fleshed prior to

cremation. Dry bones resulted in longitudinal cracks and less warping; the cremation of fleshed bones resulted in transverse fractures, curved fractures, irregular linear fractures and considerable warping (Ubelaker 2009) however, this is rarely differentiated in cremation reports.

Secondary burial practices may have occurred in the Early Bronze Age but caution should be used in the interpretation of burial data, with attention being given to events such as disturbance; old or recent, and taphonomic processes such as cut marks which may be seen on the bones. Cremation is also a secondary burial process with multiple parts of cremating and then collecting the bones before deposition occurs.

#### *5.4 Cremations*

In the past the cremation process would have required a lot of effort and time for the pyre construction and the maintenance of the cremation itself and then the collection and deposition of the remains (McKinley 2006). McKinley (1997, 130) discusses the rarity of complete cremation deposits in Bronze Age burial contexts. Different forms of cremation deposit include: pyre, burial, redeposited pyre debris, residue, token deposit and, cremated remains associated with an inhumation. Parts of the cremation process may have included: the treatment (adornment/wrapping) of the body, construction of the pyre, the placing of the body and artefacts on the pyre, the cremation and then the burial of the cremated remains (McKinley 1997, 130).

At Eriswell, Suffolk an inverted collared urn containing a primary cremation was placed in a pit under the remains of a wooden bier (Longworth 1984, 268). At Snail Down, the charcoal associated with cremated remains shows the woods used for the pyre; these included hazel, apple, hawthorn, rowan, whitebeam, cherry, oak and ash (Thomas 2005, 287). Pyre sites are rarely found, experimental cremations suggest that the pyre only affects the ground surface to c.0.10m deep (McKinley 1997, 135). Undisturbed pyre sites have been found at Linga Fold, Orkney. One example had an area of 1.08 by 1.05m, there were two layers; a 0.05m deep layer of red-brown ash over a 0.10m deep layer high in charcoal content. 282.9g of cremated bone was recovered from these layers which represents 18-28% of the 'expected weight' of one person. The bone was from the upper levels of the pyre and had been mixed horizontally. It is suggested that the cremated remains were raked in order to assist the breakdown of the remains and

to form a heap so collection would be easier (McKinley 1997, 136). Also a cremation associated with a possible pyre site was found at the Harston, Cambridgeshire, ring-ditch dated to 2020-1540 cal BC (Malim 2001, 17). At Collingbourne Kingston 8, Wiltshire, a bell barrow contained charcoal from the pyre material which was associated with a primary burial in an urn (Longworth 1984, 285).

It is commonly accepted that cremation occurred on pyres during prehistory. McKinley (1997, 134) states that if the body was placed below the pyre as suggested by Wells (1960) the oxygen supply would be cut off and the body would not have cremated. Duffy and MacGregor (2008) discuss the limitations of our assumptions of pyre cremation in prehistory. Excavations at Pencraig Hill, Lothian, revealed the remains of an in situ cremation and pyre. The way the bones were positioned was not what would be expected of an articulated skeleton and may indicate that the remains were defleshed prior to cremation. Gibson discusses pits which may have been the sites of cremation. At Carneddau, Powys, pit 21-23 was 0.8m across and contained the remains of an adult female and a child; there were no indications of a pyre built over it. Gibson states that this means the bones were defleshed prior to being burned in the pit and also suggests that the mixing of bone and charcoal indicates the stoking of the pit (Gibson 2007, 58). It is possible however that these remains may have been cremated elsewhere and further burning with pits was part of some later ritual. It does seem unlikely for remains to have cremated fully within a pit. At Church Lawton North, Cheshire, there were three pits which had stake/post-holes in the base and sides, the surfaces of which were burnt and were filled with charcoal and ash. These features only contained minute fragments of cremated bone (McNeil 1982, 47). One of the so called fire pits contained 218g of cremated bone so the definition of 'fire pit' may need consideration.

Whilst Gibson (2007) and McNeil (1982) discuss the possible use of these pits for the process of cremation, it seems more likely that they were part of an extended burial process, or ritual as not all 'fire pits' contained fragments of cremated bone (as at Church Lawton North). Other activities which related to burning may have resulted in these features; such as the burning and destruction of small stake/post-structures.

Redeposited pyre debris can be confused with un-urned burials, although pyre debris would be comprised of a mixture of charcoal, burnt stone/clay with lesser amounts of cremated bone and artefacts (McKinley 1997, 137). In contrast a burial would have less ash and other inclusions, but this also depends on the method of collecting the remains. The bones may have been picked out by hand (this would be more time consuming) or scooped up with a shovel or other implement. 'Primary' cremation burials apparently have a higher weight (902.3-2747g). Multiple cremations are most often comprised of one adult with one immature individual (McKinley 1997, 142).

#### *5.4.1 Burial in pots or pits*

Cremated remains are found in pots or pits, sometimes it can be seen from the density and shape of the deposit that the remains would have been in a bag made of organic material such as leather. The types of pots associated with or containing cremated remains found most commonly include collared urns, food vessels and accessory vessels. These vessels are usually found in an upright or inverted position. Some pots are found with lids made from other pots (Whitehall, Darwen, Lancashire) or may have had the openings covered with organic material (Barrowclough 2008).

#### *5.4.2 Cremation deposits associated with inhumations*

Cremated remains are at times found in association with inhumations, this creates interesting questions about contemporaneity. At Bee Low, Derbyshire in cist 2 the inhumed remains of an adult male were laid in a flexed position on his left side. On and around the skeleton were the cremated remains of an adult. A number of large bones were missing from the inhumation and the leg bones were wrongly articulated, it is suggested by Marsden (1970) that this may mean that the inhumation was exposed or disturbed by the deposition of the cremated remains.

At grave 1, Barns Farm, Fife an inhumed, flexed individual buried in a coffin was accompanied by a battle-axe, a food vessel; and also three cremated individuals within the coffin. It has been argued that these were buried at the same time as the inhumed individual; the dates from the cremated remains indicate that these individuals died from 2100-1900 cal BC (Sheridan 2007a, 247).

#### 5.4.3 *Artefact deposition with cremations*

Artefacts are often found with cremation deposits and are either placed in the pyre with the body, or put in with the cremated remains when they are being deposited. It is suggested by Ashbee (1960, 96) that some artefacts may only have been exposed to the pyre for a short time as prolonged exposure to such heat would render them unrecognisable. Brück (2004) suggests that when artefacts are heat affected they belonged to the deceased, when unaffected they were given by mourners after the remains had been cremated.

A bronze awl from Hindlow cairn, Derbyshire was heat altered and had been through the pyre, whereas a gold ear/hair ornament from a cremation in Pendleton, Lancashire had no signs of heat alteration so had been deposited with the remains after cremation (Ashbee and Ashbee 1981; Barrowclough 2008, 116).

From a study of 130 Bronze Age cremations McKinley (1997, 132) found that the animal remains most often included with cremated remains were sheep, pig and bird.

The process of cremation was more complex than it may at first appear; cremation deposits are not necessarily the remains of a whole person and were deposited in different ways. Cremated deposits are also often contained in vessels or structures of similar materials as those discussed for inhumations. Cremated remains have also been found in association with inhumations, this could indicate contemporaneity or re-excavation of inhumations.

### 5.5 *Burial places*

#### 5.5.1 *Flat cemeteries and isolated burials*

'Flat cemeteries' occur, either close to round barrows as part of barrow cemeteries or near areas of occupation. At times the earliest phase of a round barrow is a burial which is placed in a pit prior to any monumental construction (Last 2007b). Flat burials have been found in various areas of the UK, including the north east of England and also in Cumbria. Isolated burials, either inhumations or cremations (such as Betchton, Cheshire and Allerwash, Northumberland) are known in the UK, but some of these are thought of as isolated due to poor contextual information or being excavated by antiquarians. These types of sites seem to be less common but this is likely to be due to their decreased visibility.

Flat sites and isolated burials are not a main part of the study, there are a few sites in the study (for example Moor Houses, Cumbria) where there is not enough context to be certain if there was originally a small mound or if these were flat sites or isolated burials.

Within flat cemeteries, deposits are at times not disturbed or re-cut, which suggests that there may have been markers to where each burial was; where there are multiple cremation deposits sometimes they are laid out in a straight line, such as at Lancaster Moor (Bu'Lock 1961; Barrowclough 2008, 114).

Fewer burial mounds are constructed from 1400BC, though there is some evidence for their re-use until the start of the Late Bronze Age. A shift to the use of urn/flat cemeteries is common in the rest of England at this time (Timberlake and Prag 2005, 15). However, a pair of cairns at Grappenhall, Cheshire formed the focus of a flat cemetery of collared urns and food vessels (Mullin 2007, 86).

Aglionby, Cumbria was also probably a flat burial cemetery, but due to the lack of records this remains unclear. Aglionby included both inhumed and cremated remains, some of which were associated with collared urns (Hodgson 1956).

An example of a possible flat site can be seen in the evidence from Betchton, Cheshire. Cremated remains were found at Betchton, near Sandbach in 1928 (Newstead 1939, 40). The burial was within sand, there were no indications of a mound but the site was on a natural rise. The field had been extensively ploughed and the ground levelled for the landowner's garden. The finds included the upper portion of one large urn which contained the bones and one small incense cup and bone pin. The assemblage was found 'in a compact mass, in the natural deposit of sand, surrounded by discoloured earth, not far below the surface' (Newstead 1939, 41).

The incense cup from this site seems especially interesting due to the star pattern on the base. The cup was bi-conical in form, decorated with a triangular pattern of parallel lines bordered by one groove above and two below. The lower half was obconical with a deep central pit/depression followed by two concentric rings and a six rayed star within a concentric ring. Newstead (1939, 442) compares this to similar cups found in Ireland and also to the Lansdown sun disc. The cinerary urn had a broad heavy projecting rim and angular shoulder which forms the widest part of the vessel.

The diameter of the rim was 23-24 cm. The bone pin was 8cms in length and was calcined (Newstead 1939, 43).

Inhumations were found in non-barrow contexts at Babraham Road, Cambridge and were dated to 2205 – 1895 cal BC (Malim 2001, 17). At Grandtully, Perthshire a flat cemetery had seven identified graves with the cremations of seven individuals which were unequally spread among the pits (Simpson and Coles 1990).

Flat cemeteries seem to be less commonly found than barrows, whatever the reason for differentiation between flat sites and barrows, burial practices remain similar.

### 5.5.2 *Barrows and cairns*

Round barrows and/or cairns are the most common form of prehistoric monument in Britain, with c. 30,000 sites known across the country (Parker Pearson 1993, 91). Features commonly found as part of barrows are pits, stake/post-hole circles, cists and 'mortuary houses' (Ashbee 1960, 41). Many barrows, and cairns have a long history of change and enlargement; the final appearance of the barrow usually being far different from how it would have begun (Barrett 1990, 184; Last 2007b).

Pre-construction and early traces of burning are found and probably represent clearing for the construction of barrows (Ashbee 1960, 58). Other occurrences prior to barrow or cairn building include burial, pyre and occupation evidence.

At Green Howe, Yorkshire (Wood 1972) near the centre of the barrow at the old surface was a hearth which was dug out of the soil and made of stones, this is thought to have ante-dated the barrow but had no associated artefacts. However, the pre-barrow soil contained fragments of stone axes, numerous flint artefacts including arrow heads and scrapers, and also numerous pottery fragments including Peterborough, and Beaker ware.

Stake and post-hole circles at times pre-date barrows and cairns or are built as an elaboration of these sites. According to Ashbee (1960, 63) there are two basic forms of stake/post-hole circles at barrow and cairn sites, peripheral and internal. These range in size from 3-15 m in diameter, the internal type is usually smaller. The peripheral type was around the edges of the mound and may have been for retention. The internal type, found beneath mounds, often seem to have been destroyed prior to the barrow or cairn construction (Ashbee 1960, 62). Post and stake-circles can also be

categorised into simple or complex categories. Simple circles consist of a single circle, complex circles may consist of two to four concentric circles and both of these types may be widely or closely set. Examples of complex type are Sheeplays 293, Glamorgan; Tregulland burrow, Cornwall and Bleasdale, Lancashire (Ashbee 1960, 63; Varley 1938).

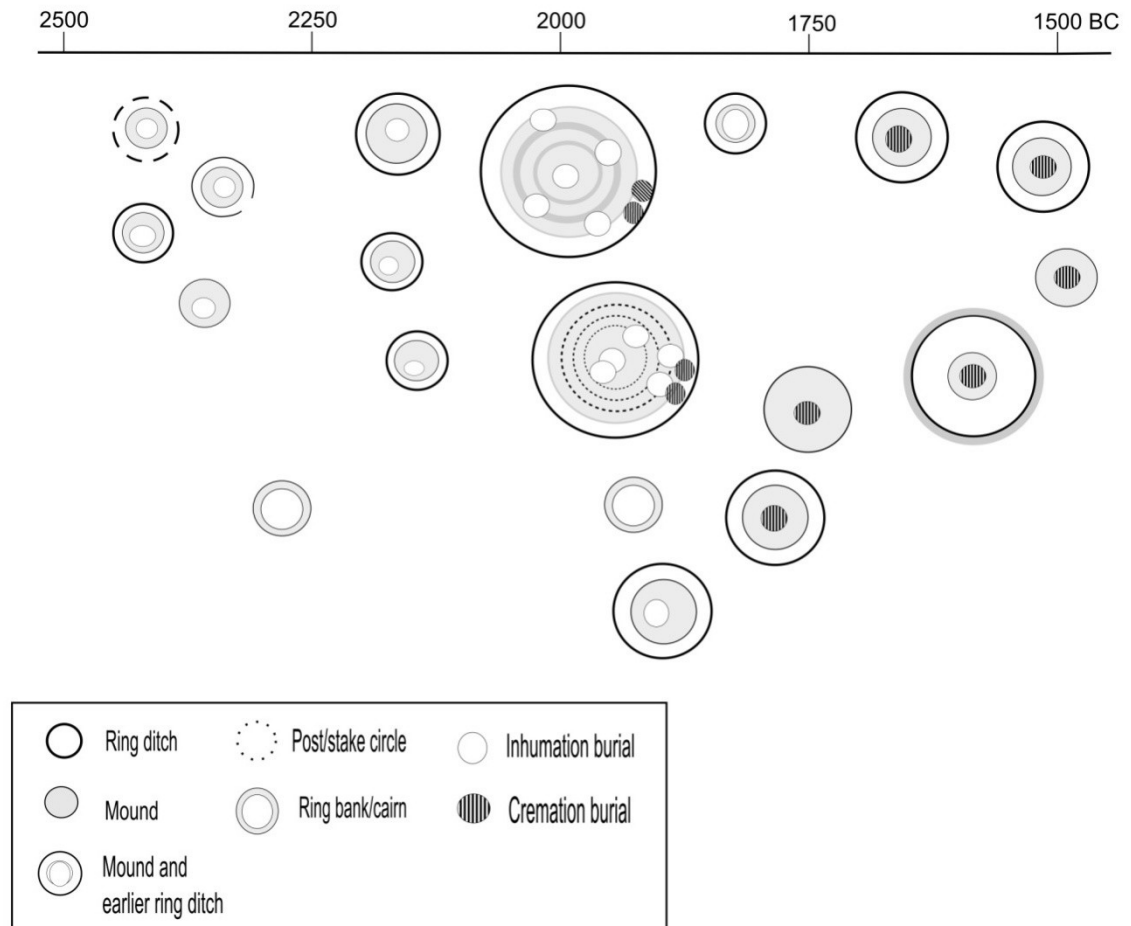


Figure 7: A chrono-typology of Early to Middle Bronze Age mounds and ring-works (after Garwood 2007a).

Single ring-post and stake circles span the whole period. Those built before c. 2100 BC are usually not associated with burials, for example, Trelan 2, Cornwall (Last 2007b, 164). Multiple concentric stake circles have a narrow span of around 2100-1800 BC and occur as episodes of monument elaboration/re-use, for example, Fordington Farm, Dorset; Barnack, Cambridgeshire and Deeping St Nicholas, Lincolnshire. The three later exceptions to this within Garwood's study (2007a, 34) being Brenig 40, Denbighshire; Four Crosses 1, Powys and Hodcott Down A, Berkshire (also see figure 7). These three consist of multiple stake-circles which preceded single-phase mound



building events. Post-hole circles also seem to have occurred in other ways such as being a part of 'open' ritual enclosures (Last 2007b, 165). At Amesbury G71, the first phase was the primary grave of an adult within a semi-circle of stakes and a small ring-ditch, after the burial of an adult man, within the re-cut same grave, 3 circles of wooden stakes were placed around the ring-ditch. A mound was later built after the decay or removal of the stakes (Woodward 2000, 24). At Deeping St Nicholas the first burial was a child aged 3-5 years in a coffin, the position of the burial was marked by a large post. Surrounding the child were nine stake-circles and a shallow ditch, this was left for a period of 25-75 years before the first barrow mound was raised (French 1994; Woodward 2000, 26). In these examples the circles seem to have been used to contain or mark out the burial in some way. At some sites there is the visible 'closure' of these circles. At Oddendale, Cumria the double circle was no longer used as the postholes had been sealed with stones before a ring cairn was constructed (Gibson 2005). These structures, as well as possibly being a practical structure at some sites, seem to have been about enclosing or marking out areas of significance.

Round barrows have traditionally been classified by outward form including: bowl, bell, disc, saucer and pond-shapes (Ashbee 1960, 24); cairns may be categorised in similar ways; types include: simple, platform, kerb and ring (Woodward 2000, 16). There are two basic forms of construction, earth-mounds and stone-cairns and there are many composite mound structures of both materials. Both barrows and cairns have great variation in size and shape, some are ditched/banked (Woodward 2000, 19). The value of classification by outward form is questionable as these classifications were created from Wessex barrows; these classifications do not account for complex sequences or non-mounded types such as platform, ring or tri-radial cairns (Last 2007b, 157).

Ditches may occur as functional constructions being a result of the removal of soil for barrow construction; they also occur as part of later elaborations of burial mounds; examples being Woodhouse End, Cheshire and Long Crichel 5, Dorset (Rowley 1977; Green et al. 1982).

At Woodhouse End, in order to prepare for the barrow the site was de-turfed, the topsoil removed and a channel was dug and used. A pit was then created and a deposit was made (of which only a beaker was found) a cairn was then constructed

over this. Then the mound was constructed from sand taken from the surrounding ditch. This has been interpreted by Rowley (1977) as one phase. Later (phase 2) a fire pit was dug through the existing barrow and used, then filled. An oval pit was then dug and filled. Four cremation burials were placed in the ditch which was then filled with river stones, earth and domestic debris. The latest activities at this site (phase 3) include the insertion of a fifth cremation into the ditch fill, and then the barrow was enlarged using sand from a second ditch. All the features except the second ditch were covered with stones. Later the second ditch was filled with stones, earth and debris (Rowley 1977, 1).

Barrow and cairn structures may start as a similar creation or process but when they are 'finished' the end appearance is varied; what we think of as barrows or cairns also include in their process stake and post-hole circles, ring-works, platform cairns and other features such as monoliths. Sites with good quality contextual information, such as at Oddendale, Cumbria reveal phases of use, closure and re-use.

### *5.5.3 Site clusters and cemeteries*

In the study barrows and cairns are considered to be similar structures which are used in similar ways; for mortuary practices, rituals, and as locales and significant places.

Cemeteries of barrows and cairns are known to occur in linear, nucleated, and/or dispersed patterns. The limitations of attempts to categorise barrow and cairn structures in a typological way are discussed in chapter 2.

Examples of cemeteries include Normanton Down, Wiltshire; Winterbourne Stoke, Wiltshire; Barrow Hills Radley, Oxfordshire, and Acklam Wold, Yorkshire (Barclay and Halpin 1998; Woodward 2000).

Overall, few entire cemeteries have been studied, with exceptions being Barclay and Halpin (1999) and Lynch (1993). Ashbee (1960) discusses barrow cemeteries in the Wessex area where there is a high frequency of sites which can be found in well defined groups. Ashbee defined barrow groupings as either linear, nuclear and/or dispersed. Linear cemeteries such as Normanton Down are barrows grouped in a line or lines from a barrow which may have been the earliest or 'founders' barrow. Nuclear cemeteries such as Wilsford cemetery are where barrows form a group around a barrow or other central point; which was perhaps an initial site as above (Ashbee 1960,

34). It seems unclear whether there is good dating evidence for the idea of the first/'founders' barrow, this would need to be investigated further with radio-carbon dates.

Garwood's (2007a) more recent chrono-typological study of barrow and cairn structures is useful but is also more focussed on sites from the midlands and south of England. Garwood does not tackle cemetery formations; radiocarbon dating of multiple samples from cemeteries would be required to obtain sequences to show how cemeteries form over time.

It is claimed that in Dorset small barrow groups were built, one to cover the pyre remains and others to cover the cremation deposits and urns (Grinsell 1953). Beacon Hill barrow cemetery consists of 20 barrows and North Hill Cemetery has 17, both Somerset (J.Lewis 2007, 81).

Withington Hall cemetery, Cheshire consists of four barrows and is three kilometres from Jodrell Bank. The first mound was excavated by David Wilson and Keele University in 1976-77. The barrow was a sand and turf mound, 18m in diameter and 0.6m high. The cremated remains of a female individual (dated c.1490 BC) around 18 years old were found, this individual had received a blow to the head. The remains were deposited in a leather bag, in a D-shaped pit which was later filled with turf taken from the cremation area and then sealed with other layers. Firstly, turf was placed over the cremation pit; this was then covered with sand and gravel, then a layer of charcoal, after which the barrow was constructed. During a later phase, two/three other urned burials were added. Barrow three at this cemetery was also excavated, an urned burial was found there was also evidence for L.B.A. activity from stake holes (Wilson 1980: Morgan and Morgan 2004, 97).

Barrow cemeteries are less discussed in northern England. In Yorkshire, Elgee (1930) noticed linear groups, Ashbee (1960, 35) also describes Stanton Moor, Derbyshire as a linear cemetery. Barnatt and Collis (1996, 67) describe barrows and cairns in the Peak District as being single or paired, with larger groups such as at Arbor Low (five around the henge) being rare. Barnatt and Collis (1996) discuss the areas with a high density of sites; each site is at such a distance, that there are not deemed to be cemeteries as described by Ashbee (1960) or Fleming (1971).

A brief examination of the barrow groups in Mortimer (1905) does not show any strong patterns of grouping comparable to those discussed in the Wessex area by Ashbee (1960) and Fleming (1971). The majority of these groups are in vague clusters, some groups show no distinct form at all.

Group	Description
Towthorpe	Linear
Wharram Percy	Vague cluster
Aldro	5 sub-groups, clusters
Acklam Wold	Cluster
Hanging Grimston	Dispersed separate clusters
Painsthorpe	Nothing distinct
Garrowby Wold	Some nucleated, some dispersed
Calais Wold	Vaguely linear
Riggs	Small clusters
Fimber	Mostly historic
Life Hill	Nothing distinct
Garton Slack	Vaguely linear
Driffild	Nothing distinct
Huggate Wold	Nothing distinct
Huggate and Warter Wold	Four small clusters
Blanch	Two nuclear sub-groups and outliers

Table 2: description of cemetery groups in Mortimer (1905) demonstrates a lack of linear or nuclear groups.

The term ‘cemeteries’ is perhaps inaccurate, as it implies something strongly set out, some areas have such large distributions of sites that the groups of barrows and/or cairns are more likely to have developed organically.

Barrow cemeteries demonstrate the importance of particular places where people returned to carry out burial activities. Different barrows within a cemetery (such as at Church Lawton, Cheshire) may have been used contemporaneously. Areas with large barrow cemeteries or groups (such as Goodmanham Yorkshire) may also indicate a greater population level over time. Both these questions would perhaps be verified through radiocarbon dating.

#### 5.5.4 Caves and ‘natural’ places

It is debatable whether we can divide constructed monuments such as round barrows from what are perceived as ‘natural’ burial places such as caves. Prehistoric people may not have differentiated between ‘natural’ and ‘created’ burial places as we do. At

times structures are built for burials within caves, for example at Dowel Cave and Fox Hole Cave, Derbyshire (Barnatt and Edmonds 2002, 122-4). Unfortunately prehistoric cave burials are rarely radiocarbon dated and artefacts are not always clearly associated with burials due to disturbance. Caves with burial activity are often classed as Neolithic and Early Bronze Age. Examples of radiocarbon dated human remains from caves include: Rawthey Cave, Cumbria 1605-1307 cal BC (Murphy 2011); Ash Tree Cave, Derbyshire 2457-1914 cal BC (Hedges et al. 1996).

Green (1989, 76) discusses artefacts found at Wetton Mill cave, Staffordshire which date from late beaker period. These include items which are interpreted as a leather-working tool kit: knives, scraper, spatula and perforated point and have also been found at Middle Bronze Age sites such as Ogof yr Esgyrn.

Some barrows and cairns are built onto the bed-rock which is used for burial when graves are cut into it. Also some mounds which have been used for burial are natural. Ewanrigg, Cumbria (Bewley et al. 1992) is a natural glacial knoll. 26 cremations and two inhumations were recovered from the site. Dates from charcoal gave a range for the collared urn burials of 2460-1520 cal BC. The cremations were arranged in a rough semi-circle around the summit of the site; the inhumations were at the centre of the knoll. Also the so called flat cemetery of West Linton, Scottish Borders (Hunter 2000) was on a low hillock, there were nine surviving cists with five inhumations and three cremations.

Early Bronze Age burials were also deposited at caves and natural mounds; barrow and cairn sites also made use of natural features such as limestone. Cave sites unfortunately have less understood stratigraphy and require further radiocarbon dating.

## *5.6 Conclusion*

As can be seen from this chapter burials in the Bronze Age were complex, this can be seen where textiles and plant remains are preserved. There was also great variety in how bodies were processed and deposited as well as the places which were used.

Variation may have been due to several factors including: regional diversity, status, beliefs – which may vary within and between groups, time and the current dominant ideology, the place of death (death away from home may lead to the

defleshing/secondary burial of the corpse), illness and disease, and lastly the use of a burial rite due to the deceased's individual circumstances, such as a positive or negative death. If an individual died a certain way they may have required burial treatment accordingly. This might have been in order for them to reach an afterlife, for the safety of loved ones, to make up for circumstances of death, or to redistribute personhood through the group.

Bronze Age burials were varied and complex. Burials were inhumed and cremated, these were not necessarily simple processes but took place in multiple stages relating firstly to the preparation of the body and the creation or obtaining of items which were necessary for the wrapping and accompaniment of burials. This was followed by the lengthy process (in the case of cremation) and the deposition of the dead.

Burials in the Early Bronze Age whether inhumed or cremated show a concern with wrapping which is seen in the use of plant remains and animal skins to shroud the body and in the containment or shielding of the body within containers or structures of wood and stone. The construction of burial places also adds to this theme; burials are at times also covered with different materials or soils such as clay, as at Noon Hill, Lancashire. The wrapping and covering of the body through both burial and construction processes may indicate a need to preserve the preserve, or contain the dead out of respect, fear or the consolidation of grief.

Early Bronze Age people may have had various reasons for choosing different burial processes; some of this variation is to be expected due to the time span covered.

## **6. Chronology and artefacts**

### *6.1 Introduction*

Artefacts have been a large focus of Bronze Age burial studies. The majority of chronologies have been based on artefact types and changes in these forms over time. This chapter discusses the evidence and limitations of Early-Middle Bronze Age chronology, including artefactual, stratigraphic and radio-carbon evidence. The main recent chronologies which have been developed from typology and radiocarbon dating are discussed along with the types of artefacts which give these dates. The use and treatment of artefacts is also discussed.

### *6.2 Early Bronze Age chronology and radiocarbon dating*

Knowledge of barrow and burial sequence is held back by a lack of a holistic chronology. There is a lack of dated sites within the study area, and sites which have been dated within the UK are predominantly dated from samples of charcoal not human bone (Garwood 2007a; Nowakowski 2007; Healy & Harding 2007; ORAU database accessed 06/04/11) and these dates are more often from pre-barrow contexts rather than burial contexts.

The radiocarbon dating of objects has increased within recent years but these sequences are rarely incorporated into the wider scale sequential interpretation of sites, burial or settlement (Ambers et al. 1992; Sheridan 2007a, b).

Healy's (2012) work on the Bayesian modelling of articulated late Neolithic and Early Bronze Age inhumations assessed the chronology of inhumations associated with beaker pottery, as well as those burials before and after this time. Healy discusses a lull in crouched burials between c.2900-2629 cal BC and 2510-2350 cal BC as evidence of no surviving insular burial tradition (Healy 2012, 144). Healy analysed 135 dates from various sites in England, Scotland and Wales, a large proportion of the sample was of dates from human bone. The majority of dates from English sites were from the south and midlands. Only 13 dates were from Yorkshire and Derbyshire, none were from Cheshire, Lancashire or Cumbria. Some of the dates were obtained some years earlier, which may cause inaccuracy.

### 6.2.1 Artefact chronologies

The variety of materials which were used in the creation of grave-goods includes gold, bronze, tin, amber, jet, chalk, stone, wood, bone and textiles. Uses include tools, weapons, items for personal adornment and ritual. Not all burials are accompanied with objects; Greenwell examined 379 burials, only 94 had objects; Mortimer excavated 300 furnished burials and found 258 without artefacts (Ashbee 1960, 95).

Most researchers have used works on pottery or metalwork groups to create a chronology; more recently the work of Needham (1996) combined radiocarbon dates with both pottery and metalwork chronologies, from burials, settlements and hoards. Burgess (1980) had previously suggested four metal using periods based on the most common artefact groups and classes of four site types. Artefact classes and assemblages added definition to the periods but despite the complexity of existing artefact chronologies these were not used to determine the definition of period boundaries (Needham 1996, 121). Needham reworked the middle two of Burgess's periods into three due to a need to reassess the overlap between artefact types (1996, 122). Needham used C-14 and relevant dendrochronological data, these data sets were combined to create an 'independant regional chronology', each period is made up of a set of artefacts thought to be significant. Recently Roberts (2008) reviewed the sequence of Bronze Age objects.

An overview of artefact chronologies and associations from Needham (1996) and Roberts (2008) now follows.

<b>Needham 1996</b>	<b>Roberts 2008</b>	<b>Date range</b>	<b>Associations</b>
Period 1	Period 1 and 2	2500-2300 cal BC	Beakers
Period 2	Period 3	2300-2050 cal BC	Beakers, flexed inhumations
Period 3	Period 4 and 5	2050-1700 cal BC	Food vessels, cremation
Period 4	Period 6	1700-1500 cal BC	Urned cremation, collared urns

Table 3: the relevant periods from the chronologies of Needham (1996) and Roberts (2008).

Evidence for the earliest use of copper and gold dates from 2500-2300 cal BC; this includes beads, awls, rings, flat daggers and possibly early halberds (Roberts 2008, 74),



the use of jet and amber increases from 2500-2400 BC (Roberts 2008, 89). There are very few c-14 dates associated with beakers or metalwork before c. 2500 BC, other dates fall before c.2270 BC among them five from human remains with beakers, which are weighted towards 2500-2300 BC (Needham 1996, 124). Beaker pottery is fine in appearance and often decorated with different geometric designs on panels of the pot. While beakers have most commonly been related to 'beaker' burials assemblages and ritual associations such as the drinking of alcohol and hallucinogenic substances (Shennan 1978; Dronfield 1995); sherds of beaker pottery have also been found in settlement contexts (Brück 1999).

From 2300-2050 cal BC beaker pottery was regularly placed in graves and burials are predominantly crouched inhumations, with beakers being one of the most common grave-goods (Needham 1996, 127). Beaker pottery seems to have been used for both day to day activities and also for burial, with various contents such as: fluids, food and also bones (Ashbee 1960, 95). Other objects in use include flat riveted daggers, flat axes, halberds, tubular beads, ribbed and plain bracelets, bangles and basket earrings (Roberts 2008, 75).

There are two types of Bronze ear-rings: basket or strip. Bronze ear-rings were found at Stakor hill, near Buxton near the mastoid bones of a skeleton, the mastoid bones had green staining upon them (Barnatt and Collis 1996, 93).

Bronze Age metal artefacts have been categorised into weapons, tools and ornaments. This division is based on context, and modern parallels. Items such as daggers, however, can be used as weapons, tools and ornaments (Roberts 2008, 73).

Bronze items have been found as grave-goods and as hoards and wetland deposits (Bradley 1998). Flat daggers have an early date; from 2500 BC. Riveted daggers and flat axes come into use around 2300 BC (Roberts 2008, 75).

Flint tools still continued to be used in the Early Bronze Age; one of the most common materials to be found accompanying burials is flint. The most common flint objects being knives, arrowheads, scrapers and flakes which all continue to be used in the Early Bronze Age, stone battle axes are also at times found in burial contexts.

Roe's (1978) discussion of perforated stone implements illustrates the differences between battle axes, axe hammers, mace heads, adzes and pebble hammers; with battle axes being linked to EBA pottery and metalwork. Battle axes are at earliest associated with beakers and then with food vessels, convex non-expanded types are usually early, some early battle axes such as early group XII are crudely shaped and large. Early types are followed by intermediate and developed forms which are concave in profile (Roe 1978, 23).

Early Bronze Age flint daggers are rare in Britain and are most often found in beaker graves. In size they were from 150-180mm long and around 60mm in width (Butler 2005, 172).

There are also cases of burials which have a covering of flints, for example burial 2 at Amesbury G.71 and a burial at Bee Low, Derbyshire. Pieces of quartz are also found with burials as for example at Siggett Barrow, Derbyshire and at Weaverthorpe 41, Yorkshire.

From 2050-1700 cal BC there is an increase in cremation as well as diversification in pottery for funerary use (Needham 1996, 131). Dated food vessels predominantly post-date 2000 cal BC and collared urns emerge around the same time (Needham 1996, 130). Cordoned urns are broadly parallel but few have been dated. Inhumations continue but there is a decrease in dated beaker burials from around 2000 cal BC (Needham 1996, 131). 'Rich' aceramic graves such as Bush Barrow fall within this period; the use of jewellery related items such as spacer plates of amber and jet peak around this time (Needham 1996, 132). Jet spacer-plates are usually associated with food vessels, so are in use from around c.2200 BC, disc bead necklaces are earlier. Other ornaments of jet include: V-perforated buttons and belt rings (Roberts 2008, 91).

Inhumations with jet necklaces are noted at Cow Low, Grindlow and Middleton Moor Derbyshire; all these examples were with adult females. At the latter site the necklace was positioned around the neck (Barnatt and Collis 1996, 94). At the settlement site of Nab Head, Pembrokeshire, stone beads were discovered, which had been made from flat beach pebbles. These may have been used to make necklaces and bracelets (Burrow 2006, 13).

Very few complete or near complete necklaces of jet or amber have been found and there have been no large finds of faience beads. Amber necklaces were found at Golden barrow, Upton Lovell and Little Cressingham, Norfolk. It is more common for amber beads to be found in small amounts with other types of materials. Jet occurs similarly, larger groups of beads found at Mount Stuart, Bute and Masterton, Fife (Woodward 2000, 116). Similar beads are also made from less quality similar materials such as shale and lignite as at Moseley Height, Lancashire.

In contrast to beaker pottery; collared urns and food vessels tend to be larger and coarser. Food vessels are heavy, thick pots which are also decorated. These vessels vary in quality.

Sheridan's (2007a) food vessel chronology is based on 50 radiocarbon dates relating to food vessels in Britain. Most of the British dates were not obtained recently, the sample includes 15 reliable Scottish dates. 12 of these dates were obtained from human bone; both cremated and inhumed (Sheridan 2007a, 246).

Food vessel use in southern England dates from 2300-1750 cal BC (Barrow hills, Radley) and a date from Long Ash Lane, Frampton, Dorset shows that food vessels were used until 1690-1510 cal BC. Needham's chronology estimated that they were used from 22/2100-1700 BC and perhaps till slightly later (Sheridan 2007a, 257).

Collared urns date to around 2200-1200 BC, these are heavy pots with a collar; they are varied in decoration and form (Roberts 2008, 86).

Other artefacts which come into use during this time include: flat axes, flat triangular daggers and halberd pendants (Roberts 2008, 75).

Faience is a glass like material with a separate glazed surface coloured with copper compounds to achieve a blue/turquoise colour; faience dates from around 1900 BC. The star and quoit shaped beads mostly occur in Scotland (Woodward 2000, 110). Segmented faience beads are most common, other shapes include, fusiform, spherical, oblate and star-shapes. Faience beads in star shape were found at the triple barrow site at Beeley Moor, Derbyshire (Radley 1970).

From 1700-1500 cal BC there were several important changes in burial practices, pottery and metalwork. Urned cremation in collared urns and other Early Urns continued in burial tradition, collared urns date to around 1800-1100 BC (Longworth

1984, 79). Collared urns have previously been thought to be exclusively related to mortuary contexts (Burgess 1980, 84) however, examples have also been found at occupation sites and also as part of occupation debris which has been incorporated into barrows, cairns, caves and ditch enclosures. Such examples within the study area include Thixendale, North Yorkshire; Whalley, Lancashire and Beeley, Derbyshire (Longworth 1984, 76).

'Richer' graves show the well known shift from inhumation dominant to cremation dominant rites (Needham 1996, 132). Objects which are associated with this period include: ogival daggers, tanged razors, pins, flanged axes, tanged spearheads, end looped spearheads and pegged socketed spearheads; ogival daggers and tanged/socketed spearheads are predominant from c.1700 BC (Roberts 2008, 75). There is evidence for occasional use of beakers and food vessels as funerary accompaniments after c.1700 cal BC, but would take more dates to confirm continuation (Needham 1996, 132).

Accessory vessels have also been known as pygmy cups, incense cups and grape cups, as these names imply these are small pots which are often associated with collared urns. These also tend to have elaborate patterns at times on the base (as at Betchton, Cheshire). Accessory vessels have also been associated with children despite the fact that they are deposited with adults as well (Gibson 2007).

Mortimer (1905) describes bone pins as 'hair pins' as those discussed by Mortimer were found predominantly at the back of the skull of female individuals (barrows 113 and 81). There are also examples of these being used as fasteners for clothing or burial shrouds, as for example at Gristhorpe.

Studs of amber, jet, shale and pot are also known to be found in pairs near skulls (Ashbee 1960, 110). These can be seen in two different forms, firstly, those with a domed top which is of a smaller diameter than the base; secondly those with a top and base of equal diameter. These have been recovered from various contexts in E.B.A. Britain and Northern Europe (Rowley 1977, 22). At Woodhouse End, a pottery stud of the first type was found in urned cremation 1 along with a small flint flake and a larger

calcined flint implement (Rowley 1977, 13). These were associated with the cremated remains of one possible female adult and one juvenile individual (Rowley 1977, 20). This example compares closely in size with a pair of jet studs found with a crouched inhumation burial in Barrow 70, Wharram Percy. The position of the studs, one on each side of the neck area, led the excavator to suggest that they had been worn as ear ornaments (Mortimer 1905, 47 and 75). At Whitelow barrow (Ramsbottom) a pottery stud was found with flints in secondary burial 'E' (Tyson 1994, 5; Barrowclough 2008, 141). The pottery stud from Stanton Moor (Barrow T.13) is of the same type and was found inside an accessory vessel within a collared urn placed as an accessory to cremation burial J (Rowley 1977, 22). At a barrow on Rishworth Moor, near Huddersfield a stud of jet was found (Barrowclough 2008, 142).

### 6.2.2 *Site chronologies*

While objects and associated materials have often been assessed chronologically as part of wide dating schemes, it is rare for such dates to be discussed in order to compare the chronology of burial sites. Garwood's (2007a) study represents a rare attempt to understand the chronology of burials and burial sites on a wider scale (see figure 7). Garwood (2007a) states that while there have been general chronologies for the Late Neolithic and Bronze Age, Needham has not been widely used because 'descriptions are too easily disengaged from interpretation' (Garwood 2007a, 31).

Garwood criticises how round barrows have been viewed as an 'unchanging environment' (Barrett 1994, 125-9). It is still often assumed that late Neolithic and Early Bronze Age monument types and burial practices were broadly contemporaneous from 2500-1500 BC, this does result in the merging of these periods for interpretations of burial archaeology. It would be more realistic to say that the change from Late Neolithic to the Early Bronze Age was gradual and thus there is overlap in the artefacts, practices and mortuary structures which are used in each period, regional variation will also play a part in this overlap.

Garwood's chronology is useful in its attempt to temporalise mortuary sites as opposed to just artefacts. This is carried out by categorising sites which have been C-14 dated into categories:

- Multi-phase round barrows

- Post and stake-circles and 'open area' sites
- Single phase round barrows

*Multi-phase barrows* have initial 'primary' construction events in the Neolithic, with second phase structures usually dating from 2100-1800BC along with the majority of burial and grave-good activity. Beakers and food vessels are deposited from 2100-2000 BC, then food vessels, miniature vessels and collared urns from around 1900-1800 BC. The last construction events at these sites usually take place before 1700 BC (Garwood 2007a, 32).

*Post and stake circles and 'open' sites:* The construction of single ring-post and stake-circles spans the whole period (though early examples are not well dated), those which were built before c.2100 BC were usually not associated with burials; in contrast multiple concentric stake-circles (good dates from 14 sites) were built from 2100-1800 BC and occurred as episodes of monument elaboration or re-use of multi-phase sites. Open area monuments usually lack formal burials. Garwood further splits these sites into two categories:

- Small embanked enclosures with flat or concave interior surfaces such as ring-barrows/cairns and pond barrows.
- Low flat-topped mounds such as platform cairns and barrows.

These span 2500-1500 BC but construction events are rarely dated. Human remains and artefacts are rare at these sites from c.2500-2100 BC but are common at 'open' sites built after 2100 BC (Garwood 2007a, 34).

*Single phase barrows:* Before c.220-2100 BC single-phase mounds were usually small and associated with a single inhumation event with beakers. From 2100-1800 BC earlier mounds were selected for further elaboration. From c.1900 BC and after 1800 BC there was renewed emphasis on single-phase mounds. Some single phase burial mounds after around 1650 BC have in situ cremation pyre remnants beneath the mound (Garwood 2007a, 37).

Garwood's (2007a) sample is predominantly made up of sites from southern England; this was supplemented with a small number of sites from Wales and one each from Derbyshire and Yorkshire. Garwood only used recently well dated sites. Overall he

used a sample of 49 sites; this is a small sample when the sites are split further into categories

There are 22 sites which Garwood classed as multi-phased: Amesbury 71, Fordingham Farm, Barnack, Sproxton, Deeping St Nicholas, Brenig 45, Brenig 51 and Carneddau 1 were all included in the categories of both multi-phase and open/stake circle sites, of which there were 21. Brenig 40, Four Crosses 1 and Hodcott Down A, are included in both the categories of open/stake circle sites and single-phase sites of which there were 19. Such categorisation is not always useful if sites are changing and developing over time.

### *6.3 Occupational objects?*

Wrist-guards are flat, rectangular or convex and waisted plaques, they are perforated one to three times at each end and were probably mounted on leather or similar material, some had gold rivets at the perforations (Ashbee 1960, 105). They are thin, highly polished and often made of bright coloured stone. Wrist-guards in Britain and Europe are made from jasper, porcellanite, steatite and porphyrite. The preferred colours on the continent and Ireland were red and grey (Woodward 2000, 100). Wrist-guards or bracers have been thought to be a part of an archers equipment, or perhaps for falconry. These are associated with 'beaker' burials and are often discussed as part of the beaker 'package' of artefacts, although wrist bracers and other 'beaker' objects most often occur singly (Woodward and Hunter 2011).

It is also possible that wrist-bracers were at times for decoration; at Liffs Low a pendant found during the 1930's excavation was made out of a bracer (c.67mm long) of a fine-grained, pale, grey-brown volcanic ash (Barnatt and Collis 1996, 116).

Awls were made of bone or bronze, the function of awls is unclear and they seem to have been used for leather working.

### *6.4 Treatment of artefacts*

Artefacts thought to be associated with male burials include battle axes, daggers and knives. Those more commonly associated with female burials are beads, awls and small knives (Ashbee 1960, 174; Woodward 2000, 116). Artefacts found with some burials seem to have been broken intentionally, for example a beaker was broken and

the fragments were placed around the head of an individual (Woodward 2002). A pot and arrows were broken prior to deposition at Sutton 268, Llandow, Glamorgan (Fox 1959, 67). At Clandon, a dagger, amber cup and accessory vessel were all broken before deposition with the burial (Woodward 2000, 107). At times artefacts are also burned in cremation pyres (see 5.4.3) this could also be part of intentional destruction.

### *6.5 Animal remains*

Animal bones are often found with burials, species which have been discussed in the literature include: canids, pig/boar, deer, goat/sheep, cow, fish, birds, shell. At times there are more elaborate deposits of animal remains which include multiple species.

Animal remains within burial assemblages also occur as bones which have been made into objects; sometimes with little alteration to the bone or tooth, for example boars tusks are part of burial assemblages and may have some polish, teeth were drilled to make beads (Kinnes and Longworth 1985).

### *6.6 How can artefacts tell us about identity?*

There are various scientific approaches to understanding artefacts, including use wear analysis, lipid analysis, X-Ray Florescence and Scanning Electron Microscopy; these methods for the most part are not within the scope of this study.

Data relating to artefacts which can be examined includes the deposition and treatment of artefacts (i.e. burning), artefact assemblages as indicators of activities, and whether artefacts were of practical use or non-practical (i.e. display). Some other aspects such as whether the objects were gifts or belongings may be accessible when there is enough contextual information (Brück 2004). Objects may relate to a person's occupation, or they may be symbols of an individual's lifecourse.

### *6.7 Reasons for grave-goods*

King (2004) discusses different ways of interpreting grave-goods, and tries to demonstrate that some grave-goods may have been gifts; Härke (in prep) also discusses the possible meanings of grave-goods. Different interpretations of grave-goods include: incongruous possessions, duplication of artefacts, finds outside the coffin, unburnt inclusions in cremations, finds in upper fill of inhumation burial, and



unusual positions (gift wraps). Härke's list of meanings includes: equipment for the hereafter, inalienable property, potlatch, indicators of rank, status and identity, metaphor, gifts to deceased, gifts to deity, remains of feast, disposal of polluted items, protection of the living, forgetting. Other things to include in these lists are structures, coffins and protection of the dead (Sayer pers. comm.).

## *6.8 Conclusion*

Overall the chronological scheme which makes the most sense for this project is that of Roberts (2008) as this incorporates earlier systems whilst updating them. Garwood's (2007a) chronology is also useful for comparison with sites outside of the study area. Another important aspect which Garwood raises is the differences and developments in the construction of burial mounds. However, it seems unlikely that morphological differences in barrow and cairn construction can be inserted into a general chronological system over a wide area. Regional variation is much more likely to be visible.

The chronology of burials is highly important for the interpretation of these sites, with this in mind sites within the study will be split into early and late groups using artefacts when possible or radiocarbon dates when available. The radiocarbon dating of case studies will also shed light on the chronology of Early Bronze Age burials in the different regions in the study.

Artefacts along with radiocarbon dating form a chronology which would be best used to interpret sites as whole, rather than just using these dates for object chronologies. Not all Early Bronze Age burials are associated with objects. While artefacts are limited when interpreted out of context, they can be useful in our interpretations of the burial process and the identity of individuals.

There is a need to differentiate between objects which may be described as general, for example: animal bones may have had a practical purpose such as for food offerings, they may have also been symbolic, apotropaic objects. In opposite, a more specific item would be an item of fastening or jewellery on the person. Thus we may differentiate between objects which are associated with the individual and those which are more to do with the burial rite.

## **Chapter 7: Methodology**

### *7.1 Introduction*

In order to build on Chapters 3 and 4, osteological techniques were used in order to answer questions on identity and Bronze Age burial practices. The osteological analysis resulted in data which was correlated with different events which make up identities.

The human remains were analysed (using morphological and metrical techniques) with the focus on discovering the minimum number of individuals (MNI), age-at-death, sex determination and palaeopathology at each site. Where possible, analysis of pre-and post-depositional processes (such as weathering, carnivore activity) are combined with contextual data to identify mortuary rites. Overall, the methods employed are mostly macroscopic and non-destructive. Sites which have good contextual information which have not had C-14 dates have been considered for C-14 analysis. This methodology is designed to correspond with an osteoarchaeologically integrated approach (see Goldstein 2006; Gowland 2006; Sofaer 2006a; Stone and Walrath 2006). Burial choices (see chapter 4) and data interpretation are also discussed.

### *7.2 General limitations of the study*

There is a lack of contextual information for remains which were excavated by antiquarians, or those from earlier excavations which were not recorded well. This reduces the level of interpretation which can be made for some sites. However, these remains are still worthy of analysis in order to gain demographic and other osteological data for this time period. Material excavated by antiquarians such as Greenwell often only survives as skulls with no post-cranial remains. This means that the data may be un-balanced as to cranial vs. pelvic sex/age estimation, which may result in inconsistent datasets, but when working with prehistoric remains these limitations are to be expected.

The limitations in how living populations, relate to burial populations are discussed to an extent in Chapter 3. Most osteological samples will have an age-at-death structure different from a living population due to the problems of selective mortality and hidden heterogeneity (Wood et al. 1992). Osteological age categories which are used are necessarily broader than a chronological age. At their most basic, biological age categories are divided into juveniles, young adults and older adults (Chamberlain 2006,

16). Another problem in ageing past populations is the belief that people in the past aged more rapidly; this has been caused by biases in methods of skeletal ageing where it is difficult to give skeletal age to someone over 50. This has also been exaggerated by a lack of understanding in the difference between average age-at-death and maximum age-at-death (Chamberlain 2006, 11).

This study as far as possible uses average age-at-death (where multiple features are available for analysis). This study does not use mortality profiles or life-tables; it is not possible to work out the crude death rate or rate of survivorship within this study as the sample is not a known cross-section of a complete population. The majority of burials within the sample are not radiocarbon dated; a number of them also lack any artefact associations. As the remains date from around 2500-1500 BC this is far too small a sample of the individuals from this time to be representative of a living population. However there are enough remains in the sample to discuss potential patterns in demography which relate to the burials.

### *7.3 Minimum number of individuals (MNI) and general criteria*

The minimum number of individuals in a deposit will be calculated from the duplication of identifiable elements and also by age related differences (size, development and morphology).

Generally, the remains will be assessed using the criteria of; Brooks and Suchey (1990); Buckberry and Chamberlain (2002); Buikstra and Ubelaker (1994); Loth and İşcan (1989); Lovejoy et al.(1985); Masset (1989); Mays and Cox (2000) for adults, Scheuer and Black (2000a,b) and AlQahtani (2008) for juveniles and also Gejvall (1963); Brickley and McKinley (2004); McKinley (2000), McKinley and Bond (2001) and, Symes et al. (2008) for cremations. Also analysis of palaeopathology (Aufderheide and Rodríguez-Martin 1998; Ortner 2003) and taphonomy (Behrensmeyer 1978; Binford 1981; Villa and Mahieu 1991) has been carried out where possible.

### *7.4 Age-at-death estimation*

To estimate the age-at-death of adult skeletons, the features examined for age-related morphological changes included: the pubic symphysis, auricular surface, cranial sutures, sternal rib ends and, dental attrition and wear (Brothwell 1989; Brooks and

Suchey 1990; Buckberry and Chamberlain 2002; Loth and İşcan 1989; Lovejoy 1985; Masset, 1989). Morphological methods such as these can be problematic in prehistoric remains due to taphonomic alterations or damage to these elements, however, the dentition often survives so is most useful.

For the analysis of dental wear, both the methods of Brothwell (1981) and Lovejoy (1985) will be used, Brothwell is the main technique for assessing dental wear of prehistoric peoples, however, Lovejoy uses narrower age ranges and also includes the wear of the anterior dentition rather than just the molars so is likely to give a more accurate age range.

Patterns of biological age may become skewed through biases in ageing techniques and preservation differences. To account for preservation biases of juvenile burials, where possible (see discussion in chapter 13) I have looked at archaeological data on child burials which may make up for where juvenile remains have not survived or were not available for analysis. Also when discussing the results on juvenile remains, if there were not enough for interpretation this is stated. There appear to be more preserved juvenile skeletons in more recently excavated sites as compared with those surviving antiquarian excavations. For example, at Amesbury G.71 of 9 inhumations, 5 were juvenile; at Long Crichel 5 of 8 inhumations only 2 were adults (Christie 1967; Green et al. 1982).

Problems with ageing techniques also may lead to under ageing older individuals, this is accounted for (as much as possible) by using as many techniques as is available for the surviving remains. As the dentition is the most common material surviving for age assessment, the techniques of both Brothwell (1981) and Lovejoy (1985) are used.

When analysing cremations, unerupted tooth crowns may survive intact (McKinley 2000, 409) the enamel of erupted dentition shatters during cremation, often the only remaining recognisable fragments are the tooth roots. Danner's (2008) method for identifying cremated teeth is used for both cremated and inhumated tooth identifications, as it uses morphological criteria most useful for fragmented or loose teeth.

Cranial suture fusion has been used in the absence of any other criteria, as cranial sutures often survive (McKinley 2000, 410) even when the remains have been cremated. Sutures demonstrate extreme variability in the order and timing of closure and obliteration, the technique has been described as unreliable (İşcan and Loth 1989, 24; Masset 1989, 95), the definition of degrees of suture closure is rather open to interpretation (HersHKovitz et al. 1997, 395). Mendl and Lovejoy (1985) suggested it is of value when used with other age indicators. When there is a limited amount of material available for aging, it is preferable to obtain some information, rather than none at all as this technique can still reflect general age trends.

Age-at-death of juveniles was assessed by examination of morphological development and metrical measurements of the bones, and dental development and eruption (Scheuer and Black, 2000a; 2000b; Schaefer et al 2009). The dentition are preferred as they generally survive better and are also not subject to adverse environmental circumstances such as malnutrition and disease, as rates of long-bone growth can be (Scheuer and Black 2000b, 11). The differentiation of adult from juvenile remains is assessed from macroscopic and morphological traits, such as cortical thickness and lack of muscle markers.

#### 7.4.1 *Age categories*

The human remains were assessed for age using whichever method(s) possible depending on the preservation of the skeletons and the elements of the skeleton which were present. These are standard age categories (Buikstra and Ubelaker 1994), the adult age categories reflect the most commonly used methods; Lovejoy (1985) and Brothwell (1981). When it is only possible to age widely (this is most common when ageing cremated remains) a wider age category may be given (for example middle to older adult).

<b>Age category</b>	<b>Age in years</b>
Infant	birth to 3 years
Younger child	3-6 years
Older child	7-12 years
Adolescent	12-16 years
Very young adult	16-25 years
Young adult	25-30 years
Middle adult	30-40 years

Older adult	40-50 years
Very old adult	50+

Table 4: Osteological age categories

### 7.5 Sex determination

The two areas of the skeleton which exhibit the most useful traits for sex estimation in adults are the pelvis and the skull. The whole skeleton should be used when preservation makes this possible. The main pelvic features used are the: ventral arc, sub-pubic concavity, inferior pubic ramus, and sciatic notch. The cranial and mandibular features used are: the supra-orbital ridges, mastoid processes, orbital margins, angle of ramus and mandibular body. These features are scored on a scale of 1-5 (1 being the most female end of the scale and 5 being the most male) when the sex of an individual is indeterminate this is scored in the centre of the range (Mays and Cox 2000, 118-119). Indeterminate is not an indication of uncertainty but means that an individual does not have particularly male or female characteristics. Where it is not possible to assign a score due to fragmentation this will be stated.

1	F	Female
2	F?	Probable female
3	?	Indeterminate
4	M?	Probable male
5	M	Male

Table 5: the range of sexual dimorphism

Only the adults will be assessed for sex, as the features which are used for sex estimation are not developed until late adolescence. Some researchers use the metrical techniques of (Schutkowski 1993) to estimate the sex of juveniles but these are not well tested on known age samples and so will not be used in this study.

Metrical techniques will also be used when preservation allows; features which are useful for sex determination are: clavicle length, scapula glenoid cavity width and height, humeral epicondylar width and vertical head diameter, and femoral maximum head diameter and epicondylar breadth (Bass 2005). The use of metrical features is useful when lacking some pelvic or cranial features, as is often the case with prehistoric remains.

## 7.6 *Cremated remains*

Cremation is the process of dehydration and oxidation of the organic components of the body (McKinley 2000, 403). The cremation process alters the appearance of bone, as dehydration causes shrinkage, fissuring and twisting (McKinley 2000, 405).

### 7.6.1 *Common misconceptions about archaeological cremated remains*

There are a number of problems and misconceptions within cremation literature these are discussed here in an attempt to avoid these problems within this project. Firstly terminology is often confused, according to Brickley and McKinley (2004), a cremation is a cremation pyre not an assemblage of cremated bone. Different kinds of cremation site include: pyre, burial, redeposited pyre debris, cenotaph/token deposit, or other cremation related deposit (Brickley and McKinley 2004, 10). However, Brittain (2007, 146) argues that the term 'token' is misleading, as it makes the assumption that collection of the complete body was necessary for cremation. Cremated bone is often described within the literature as 'burnt', 'calcined' or 'oxidized'. However, cremated bone is often not completely oxidized and not all burnt bone has necessarily been cremated (McKinley 2000, 404). Cremation reports have often concluded that, prior to burial, the deliberate fragmentation of cremated bone has occurred. McKinley (1994) examined thousands of cremations, and with the knowledge of the cremation process at modern crematoria, concluded that the high levels of fragmentation occur during post-excavation processes.

Ancient cremated remains are often seen as a lesser source of information, this is exacerbated by some researchers who see cremations as being less important, which is especially apparent where cremations are from periods with artefact rich inhumation burials (McKinley 2006, 81). The wide variety of information which can be gained from cremated remains includes: demographic data, pathology, degree of fragmentation, type of deposit, efficiency of cremation (levels of oxidation and dehydration), element representation, presence and type of pyre goods and pyre debris and formation processes (Brickley and McKinley 2004, 9). While it is acknowledged that at times some demographic data such as age and sex may be more limited in detail compared with inhumations, this is variable and depends on the levels of fragmentation within each different assemblage and a great deal of information can still be obtained.

### 7.6.2 *Analysis of cremated remains*

The cremated remains require a slightly different approach in some areas and require careful sieving to at least 2mm mesh size, with all other material (such as stones etc.) being removed at the 5mm fraction and above (Brickley and McKinley 2004, 9).

Once the remains are sieved through a stack of sieves (10mm, 5mm and 2mm) the bones from each fraction are weighed. The total weight of the bone will is obtained from the combined bone weights. The amount from each fraction along with a measurement of the maximum fragment size, gives an estimate of bone fragmentation. All fragments were also examined macroscopically; each identifiable bone fragment was separated out into the main four skeletal areas of skull, axial skeleton, upper and lower limb and then identified completely to element where possible (see appendix 16.1.2).

Variations in the mortuary rite which may have affected the remains (such as the difference in urned or un-urned cremation deposits) were also recorded. For example the remains from an un-urned burial are more likely to have suffered higher levels of sediment infiltration and disturbance (and higher levels of fragmentation) than an urned burial.

It has been suggested that weights from 2141-2500g are indicative of multiple individuals. However, greater weights have been recorded from modern cremations (McKinley 2000, 408). The weight of bone recovered from a modern adult cremation is c. 1000- 3600g. The percent completeness will be calculated for each adult deposit, using McKinley's (1993) average adult weight of 1625g.

Variations in the colour of cremated bone are related to the degree of oxidation of the organic component of bone which in turn is a reflection of the temperature acting on the bone (individual bone not the pyre overall). This provides information on: the amount of fuel, temperature of areas of the pyre and the length of time taken (Brickley and McKinley 2004, 11; Walker et al. 2008). The degree of oxidation is reflected in the colour of the bone

- brown/orange = unburnt
- black = charred c.300°C
- blue-grey = incompletely oxidised up to c. 600°C
- white = fully oxidised > c. 600°C



The colour variations in each deposit were recorded, including the element affected and the side/parts of each element. The range of the bone colours overall will be assessed in order to compare across different sites and also across different deposits within each site.

However, it should be remembered that the data on colour was gained through experimental and/ forensic work and so should perhaps only be treated as a guide to the efficiency of the pyre. The knowledge of the maximum temperature reached by an element can suggest the method/process behind the cremation. Various studies have documented the maximum temperature of different fires such as juniper and oak which reach c. 680 - 820°C (Shipman et al 1984, 308).

Fracture patterns of the cremations are also recorded using the criteria of Symes et al. (2008). These fracture types include: longitudinal, step and transverse. It is worthwhile to record fracture patterns as Bronze Age material within the study area has not been analysed in this way before and may give some indication as to whether cremated remains were fleshed or de-fleshed prior to cremation (Ubelaker 2009).

### *7.6.3 Pyre cremation*

Often our view of cremation ties in with the western view of cremation as the 'cheaper option', but this is not the case when seen in the context of anthropological and ethnographic accounts. In prehistory it seems likely that the cremation process would have been 'expensive' in the time needed to carry this out along with fuel and possible grave-goods.

The weather and time of year is something which should be considered, as cremation cannot be carried out when it is raining, or if the wood is soaked. Bronze Age people may have had to wait for a dry day for some time depending on the season and region (McKinley 2006, 81).

Experimental work has shown that the cremation process takes several hours (McKinley 1997; Downes 1999, 23). As the recovery of the cremated bones is much easier in day-light, it may have occurred in the days following the actual cremation. There are historic references to the use of water quenching to cool the bones down. The collection of the remains may have been by hand, raking/winnowing or by shovel; the collection of the bones by hand can take up to four hours (McKinley 2006, 85).

### *7.7 Stature*

The estimation of adult stature was carried out where there was survival of complete long bones, with preference being given to the femur. Complete long bones were measured with an osteometric board. The formulae for adult males and females of Trotter (1958) and Pearson (1899) were used to calculate the stature from these measurements (see appendix 16.1.3). The range, maximum, minimum and average heights of males, females and all adults were then calculated. These will be compared to other published data on stature and what it means for health in the Bronze Age. Stature will also be compared with other health indications such as linear enamel hypoplasia.

### *7.8 Palaeopathology*

Palaeopathology is rarely mentioned in Bronze Age literature (Roberts and Cox 2003, 74-89) new data in this area will be important in our understanding of health and social relations in the Bronze Age.

Evidence of pathological lesions was recorded by location, description, photography, and X-radiography was carried out when possible. Differential diagnosis was then carried out (Aufderheide and Rodríguez-Martin 1998; Ortner 2003; Waldron 2009) with reference to age/sex data to give the most likely diagnosis. Due to the ancient nature of the remains (often fragmentary) this part of the analysis may be somewhat limited. Evidence for palaeopathology previously found in palaeopathological studies of Bronze Age remains includes: dental disease, degenerative joint disease, trauma and a possible case of scurvy (Anderson 2002; Roberts and Cox 2003; Mays 2007). Roberts and Cox (2003) reviewed literature on remains predominantly from southern England, Scotland and Ireland and discovered evidence for: osteoarthritis, dental disease and wear, trauma (from violence and accident), trepanation, cribra orbitalia and infection. In order to estimate possible patterns in health status, the prevalence of any lesions will be calculated. Prevalence is the number individuals with a particular lesion out of the total number of individuals studied. Both the number and percentage of prevalences will be calculated, the prevalences will be compared over different regional areas and also with different age and sex groups in order to evaluate any patterns or social significance in health. The age at which linear enamel hypoplasia

occurred was assessed with Reid and Dean (2000). Methodological issues (discussed in chapter 3) such as biological predispositions will be taken into account which may rule out cultural interpretations.

### *7.9 Taphonomy and mortuary rites*

It had often been assumed that the practice of multiple burial is confined to the Neolithic and that single-grave burials and cremations are only found at Bronze Age sites. Gibson (2007) demonstrates that a variety of mortuary behaviours (including all of these) occur through the Neolithic and the Early Bronze Age; Gibson gives examples of Bronze age sites with 'simple' inhumation burial, cremation and possible defleshing and/ deliberate selection of certain elements for burial.

Evidence of pre and post-depositional processes such as carnivore activity, weathering and cut-marks were recorded by location, description and the percentage of the element affected; specimens will be examined macroscopically and by hand lens (Behrensmeyer 1978; Binford 1981; Villa and Mahieu 1991). Taphonomic alterations from disturbance of post-excavation processes and curation will also be recorded. Pre-depositional processes are those which are due to the mortuary practice, for example, cremation. Post-depositional processes occur after burial and can include, disturbance, root activity, excavation damage etc. Some taphonomic alterations can occur before or after burial, for example, weathering and carnivore activity. In order to differentiate between alterations which are prehistoric and those which are recent, indications such as patination and fracture morphology will be used. Root activity, staining and excavation damage will also be recorded for future reference.

Analysis of pre- and post-depositional modifications to the bones (such as weathering and carnivore activity) will be combined with contextual data to identify mortuary rites.

To assess weathering, the criteria and stages of Behrensmeyer (1978) will be used, this gives an indication of the severity of the weathering. Behrensmeyer also assigns a number of years for each stage to be reached. However, Andrews (1995) demonstrated that in Britain, weathering progresses at a slower rate than the stages of Behrensmeyer, but these criteria are still useful as a general guide. Differences

between prehistoric climates and present day experimental conditions are also problematic and should be considered (Whittle and Wysocki 1998, 156).

Evidence of carnivore activity (often interpreted as evidence for the exposure of human remains) will be recorded by type (pits, punctures, scoring and furrows) and by species (Lyman 1994; Haglund 1997, 368-373).

Fracture patterns and morphology such as, fracture angle, outline and edge will be recorded according to the criteria of Villa and Mahieu (1991). Distinguishing between peri-mortem fractures, 'dry fractures' and post-mortem injuries is important as these indicate fractures at different times during the pre- and post-depositional history of the remains. Peri-mortem fractures occur around the time of death; these are likely to produce an oblique fracture pattern (Boylston 2000, 359) with smooth margins. 'Dry fractures' are thought to be the result of post-depositional disturbance or secondary burial practices, these can be similar to peri-mortem fractures in their outline but have a rough fracture surface and margin. Post-mortem damage is characterised by transverse fracture outline, a jagged fracture margin and an un-patinated fracture surface (Knüsel 2005, 52). These fracture types will be recorded by describing the fracture margin, texture of fracture surface, fracture outline and also patination.

Animal remains are at times found with human remains in prehistoric populations, animal remains will be differentiated from human remains by macroscopic and morphological appearances of both the bone cortex and the trabecular bone.

#### *7.10 Craniology*

Cranial metrics are studied within osteology and forensic anthropology as part of racial assessment (Gill 1998). Cranial metrics may also be used to assess asymmetry and possible related congenital and developmental conditions such as abnormal or premature cranial fusion.

The cranial morphology of Neolithic and Early Bronze Age individuals has often been discussed in the past as an indication of different populations, as it has been thought that there was a change from long to round headed individuals. Although this is not a major part of this study, cranial measurements were taken when the crania were complete enough and not warped from burial or bad reconstruction (see appendix 16.1.4 for measurement details).

### 7.11 *Non-metric traits*

Non-metric traits are anatomical skeletal expressions of variation within a species; in the past such traits have been inconsistently recorded or recorded as pathology. These traits have been discussed within the literature as indications of relatedness, varying from larger scale populations to small scale communities and family groups (Tyrell 2000; Stowjanowski and Schillaci 2006; Smith and Brickley 2009). Non-metric traits were recorded within the study, but it is not thought that they will contribute as they do not have any effect on the lifecourse.

### 7.12 *Musculoskeletal stress markers (MSM)*

Musculoskeletal stress markers (MSM) are bony projections or distinct markings on the skeleton, which develop where muscles attach to the bones, and are thought to indicate activity patterns or 'markers of occupational stress' (Hawkey and Merbs 1995). Larger muscle attachments are thought to develop from the continued use of specific muscles on a repetitive basis (Lai and Lovell 1992). Musculoskeletal stress markers have been used in various studies to reconstruct lifestyles and activity patterns of past peoples (Weiss 2003, 230). MSM were recorded where possible on the long bones, however, due to the lack of available complete inhumations this will not be a major part of the study. During the recording of MSM, the interactions of groups of muscles on bones will be considered. Musculoskeletal stress markers will thus be recorded from the whole limb if possible, as the recording of MSM from a single bone will not be useful for interpreting activity.

### 7.13 *Sample selection for C-14 dating and case studies*

Some sites within the study will be chosen for case studies, samples from these sites will also be radio-carbon dated if possible. Sites which will be used for case studies will need to have good surviving contextual information and a series of well preserved human remains. One site per county will be used for a case study; case studies will discuss in depth site sequences, burial practices, local and regional contexts, as well as discussion of burial processes and identities at these sites (*see 7.15*).

The inhumation samples for radiocarbon dating were chosen on the basis of context, percentage of context and percentage of completeness of the skeletons. The samples

of cremated bone chosen for radiocarbon dating were chosen on the basis of the weight of the cremated bone available to sample and also in order to have a spread of samples from important contexts.

#### *7.14 Chemical techniques*

The study does not include isotopic work as this is beyond the scope of the study. X-Ray Fluorescence was used to analyse unknown substances which were found during the analysis of cremation deposits. This followed standard techniques (Pollard et al. 2007). However, this is not a main part of the study.

#### *7.15 Data collection and assessment*

All the human remains which were assessed in the study were analysed personally by S.Walsh. The remains which were analysed numbered 203 inhumed individuals and 109 cremated deposits which have an MNI of 129 individuals.

The human remains were assessed for all criteria discussed within this methodology: age-at-death, MNI, sex, palaeopathology, taphonomy etc. During analysis of the remains the data was collated using data collection forms and Excel. The data collection forms were specially created by S.Walsh but were based on recommended forms from BABAO and the IFA.

The collections which were used were chosen partly through their accessibility and also through the assemblages which were held. In each case the museums were first contacted to enquire their holdings and then visited initially to assess the amount of human remains held and the condition they were in before the main research visit was decided upon and organised. This enabled the ruling out of remains which were of uncertain provenance. The museum collections which were used gave a decent number of both inhumed and cremated Early Bronze Age remains from as wide an area within the study regions as possible.

Several osteological collections were accessed for this research (See Appendix 16.1). A number of these were from small museums: Buxton Museum, Manchester Museum, Tullie House Museum, Harrogate Museums, Grosvenor Museum, Bury Museum and Art Gallery, Towneley Hall, Derby Museum, Bolton Museum, Rochdale Museum, and, the Harris Museum. Collections from two larger museums were also accessed: the British Museum and the Natural History Museum, London. One assemblage which was

held by Wardell Armstrong Archaeology was also used. It was not possible to access other collections at Sheffield and Hull Museums due to problems with lack of staff at Sheffield and a lack of response from Hull.

The following remains were all inaccessible due to being held by Sheffield museum: Bee Low, Arbor Low, Bailey Hill, Ballidon Moor, Blake Low, Eaglestone flat, Near Gotham, Liff's Low, Monsal Dale, Parcelly Hay, Roystone Grange, Shuttlestone, Smerril Moor, Stakor Hill, Waggon Low, Wigber Low, Gardom's Edge (Barnatt and Collis 1996). Bronze Age remains from the Mortimer collection at Hull Museum were also not accessed.

Some small assemblages at Warrington Museum were also not analysed due to difficulties in their strict access and loans policies (Highfield Lane, Southworth Hall, Grappenhall, Kenyon Hall).

Published recent work on Early Bronze Age human remains outside of this is for the most part limited to specific site reports. Remains from several sites were not analysed either because they were analysed and published quite recently, or because they were of uncertain provenance. Those published relatively recently include: Ewanrigg, Cumbria (Bewley et al.); Borwick Manor Farm, Lancashire (Olivier 1988); Carrier's Croft and Astley Hall (Reports held by Barrowclough); Hutton Buscel (Brewster and Finney 1995), Ferry Fryston (Brown et al. 2007), Little Ouseburn (Rahtz 1989) and, Gristhorpe (Melton et al. 2011), Yorkshire.

Remains where the provenance was not certain included inhumated remains from Grin Low, Derbyshire (of which a reference was later found - Turner 1899) and also some cremated remains from Moor House, Cumbria which were later connected to a skull analysed (held by the NHM). Information on these sites was not found until the later stages of the PhD.

Other human remains which are discussed in the literature which have not been located include: Whitehall, Darwen; Revidge, Blackburn, and the Frying Pan, Blackheath (the latter was not found at Manchester Museum).

The sample used in this study is only a small proportion of the likely distribution of burials from Early Bronze Age cairns and barrows. Figure 2 demonstrates the number of sites which were included in the study compared to the number of other known

mapped sites from Annable (1987), Greenwell and Rolleston (1877); Kinnes and Longworth (1985), and Barnatt and Collis (1996).

However, the number of sites does not necessarily predict the number of potential human remains. These burial sites are highly variable as to the number of burials. Many sites have been destroyed or damaged over the years and of the many excavated by Greenwell for example, not all the human remains were removed from the barrows. Other assemblages from sites which are known to have been excavated have been lost; early excavators also often did not keep cremations but threw them back into the site with spoil.

When the remains in the study were associated with artefacts, they were for the most part associated with collared urns and food vessels. Only a small number were associated with beakers, these are listed in section 10.6.1. The human remains which were analysed were not selected for the associated artefacts (as some burials such as Hindlow had none). Beaker burials were not purposefully rejected or left out, analysis of burial context after osteological analysis revealed this lack. However, this does mean that this study does not overlap with beaker orientated research (Jay et al. 2012; Curtis and Wilkin 2012).

Some sites are discussed archaeologically which were not studied osteologically, due to the remains being inaccessible or their whereabouts being unknown. These sites are discussed in literature review sections and in chapter 10 and are not in appendix 16.1.

#### *7.16 Sample size and significance*

One of the aims of the study is to take osteological information with its context and interpret the results from the smallest details outwards to create an osteologically informed archaeology. This will work firstly on a site by site basis, and then on a larger area and regional scale. This approach should enable this research to avoid past problems such as using small sample sizes to make sweeping generalisations of Early Bronze Age burial practices (Mizoguchi 1993). Instead the case studies are used to interpret sites on an individual basis and the whole inhumation and cremation samples are looked at in regional groups. Regional patterns may be compared with the case studies and also function as larger sources for interpretations.



While the study will not include any statistical analysis such as T-tests, the approach is to look for patterns within sites, areas, and age and sex groups; results of any patterns are expressed in percentages. In site specific interpretations the numbers are too small to use statistical analyses.

#### 7.17 Data extrapolation and interpretation

Where individuals were categorised as male?/female? this is not to do with certainty of the sex assessment but with strength of specific morphological features. It is normal for there to be a range in the sexual dimorphism of certain features.

In chapter 8 when the results of demography are discussed, individuals were omitted when adult age or sex could not be ascertained. For the discussion of the results of the sex assessment the different scores of males (M, M?) and females (F, F?) were brought together.

Figures 8 and 9 below show how there is little difference in the proportions of male and females in the inhumation sample whether M? and F? scores are included or not.

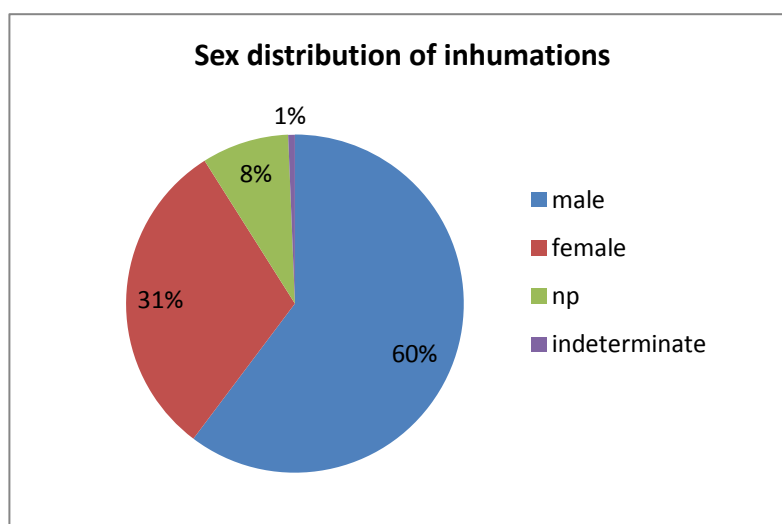


Figure 8: the sex distribution of inhumations with range of male and female scores amalgamated.

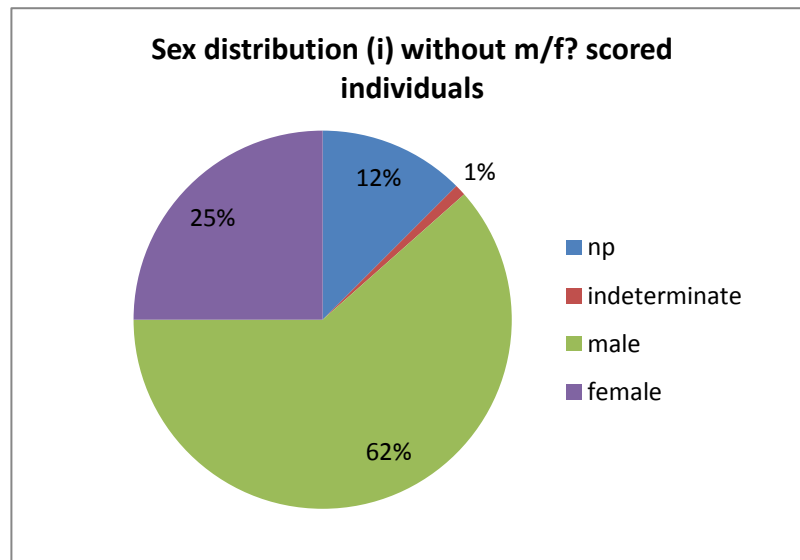


Figure 9: the sex distribution of inhumations without those individuals scored F? and M?

Using a summed total of the different scores of males and females also makes more sense when later breaking down the results into regional areas; this gives a better number of female individuals to compare against the male burials, this also applies to the cremation sample which has much lower numbers of sexed individuals.

A separate data base will be created for both inhumations and cremations. Each will have different osteological criteria but similar burial criteria. This will enable comparison of the two data sets despite the differences in the remains. Sites within the study will be mapped to show and regional distributions.

Some of the basic criteria for comparison are shown for example in Tables 6 and 7, in order to demonstrate how archaeological and osteological data may be correlated. The different criteria will be compared and correlated in order to extrapolate any basic patterns in burial and osteological processes. Patterns will be compared using the whole sample and regional samples.

Criteria	Sub-criteria	Inhumation	Sex	Age	Overall health status	Grave goods	Burial side
Age		X	X		X	X	X
	child	X	NA		X	X	X
	young	X	X		X	X	X

	adult						
	middle age adult	X	X		X	X	X
	older adults	X	X		X	X	X
Sex		X		X	X	X	X
Stature		X	X	X	X	X	
Position in site		X	X	X	X	X	X
Health		X	X	X		X	X
	Cribriform Orbitalia	X	X	X	X	X	
	LEH	X	X	X	X	X	
	Carious lesions	X	X	X	X	X	
	Dental abscess	X	X	X	X	X	
	Calculus	X	X	X	X	X	
	Peri-apical granuloma	X	X	X	X	X	
	Ante mortem tooth loss	X	X	X	X	X	
Trauma	Cranial	X	X	X	X	X	
	Post-cranial	X	X	X	X	X	
MSM		X	X	X	X	X	
Burial position	e.g. flexed (I); inverted (C)	X	X	X	X	X	X

Table 6: example of criteria which can be correlated with inhumations

Criteria	Sub-criteria	Cremation	Sex	Age	Overall health status	Grave goods
Age		X	X		X	X
	child	X	NA		X	X
	young adult	X	X		X	X
	middle age adult	X	X		X	X
	older adults	X	X		X	X

Sex		X		X	X	X
Stature		NP	X	X	X	X
Position in site		X	X	X	X	X
Health		X	X	X		X
	Cribra Orbitalia	X	X	X	X	X
Trauma	Cranial		X	X	X	X
	Post-cranial		X	X	X	X

Table 7: example of criteria which can be correlated with cremated remains

### 7.18 Burial choices and identity

As discussed in chapter 4, in order to bring archaeological data together with the osteological data in more detail, variation in burial practice and the choices entailed within this will be analysed. Databases have been made where the osteo-archaeological data is brought together. The choices at their most basic form a list of possibilities:

**Prior to death →** Osteological/palaeopathological indications →

Demography – age & sex

Illness

Trauma

Mobility

Physiological stress

Sidedness

Activity

Stature

Non-metric traits

**Death →** Osteological indications (rare)

Objects which are made for the rite/gifts

Place of burial

Method of processing the deceased

Deposited with other individuals or alone

Re-excavate previously used grave or create new grave

**Burial** → *is the rite a one or two stage process?*

- Inhumation with no further activity
- Cremation →  
Pyre: type of wood, place of pyre,  
is the pyre buried, are remains  
moved?  
Deposit type: all, token, scatter,  
mix, split
- Exposure/ manipulation → where is  
the body left to deflesh, when is it  
moved, where is it moved

*Where is the body deposited/processed?*

- Barrow –in/under; central/ditch
- Cave –mouth/back wall/in cist
- Flat cemetery –large/small;  
linear/cluster arrange; marked?
- Other

*What is the body contained in?*

- Cist
- Grave
- Wooden 'coffin'
- Urn

- Pit

*Is the body placed in any other organic material?*

- Animal skin → species → association, ritual
- Textile → clothing, shroud
- Plant remains (underneath or covering) → species → function, decorative, ritual
- Bag

*How is the body positioned?*

- Extension
- Flexion
- Which side
- Position of arms/hands

*Artefacts*

- Type → Stone, pot, metal, bone
- Location
- Complete/fragmentary/mixed with other types (e.g. beads)
- Age – worn/curated
- Burnt/un-burnt

**Barrow structure:** choices in construction sequence

Earliest stage choices:

- Position (landscape)
  - Use previously occupied/used space
  - Clear space

- Visible/hidden space
  - Use natural features – bedrock, natural rise
- Ditch/post-structures
- Deposit burial prior to any construction?
- Construction material (usually restricted by available materials)
  - Stone
  - Soil/sand/clay
  - Both
  - Special inclusions (bone, quartz etc)
  - Wood
- starts as:
  - Ditch
  - Post-structure
  - Ring-cairn
  - Full barrow/cairn
  - 'flat' burial site

Time in between:

Further burials

Other activities

Later stage choices:

- How to elaborate structure?
  - Enlarge barrow/cairn
  - Elaborate other structures
- Later burial insertions

Final stage – closing choices:

- Goes out of use
- Barrow is purposefully 'closed'

There are numerous choices which can be made throughout the burial process. Put simply, obvious choices which would have been made are inhumation or cremation. Something which has previously been discussed in the literature is burial direction (Mizoguchi 1993). Other choices which are considered in the study are layering of burials and mound phases, and disturbance of earlier burials. These burial choices are then linked with osteological aspects of the deceased such as: age, sex and disease.

#### *7.16 Conclusion*

From the analysis of burial choices, patterns may emerge which correlate certain burial choices with demography, identities, regional practices, artefact treatment and deposition, barrow construction, treatment of the body (such as positioning or wrapping). This methodology is also a way of bringing together both the archaeological and osteological data together for interpretation.



### ***Osteobiography 2: Langton barrow 2, Burial 1***

Subject 2 was an adult male aged 25-35 and around 5'9 (1.73m) in height (Greenwell and Rolleston 1877). There were no visible interruptions to his growth so he does not seem to have suffered serious illness or malnutrition while he was growing up.

He grew to become an established adult and at the age when he died he may have had responsibilities towards the protection of the group.

During an episode of violence which may have been interpersonal or with another group, he was hit with a blade or axe. This resulted in a wound to the right side of his forehead. The wound was a chopping blow which left a shallow notch in the bone. The blow would have come from the front or side so it is likely that his attacker was right handed. He lived for a while with this wound, it had started to heal before he died (see chapter 9) so he survived the violent event. It is possible that during the violence he suffered other wounds which cannot be seen on the skeleton which, along with the head wound, contributed towards his death. As the wound had been healing it was likely that he was cared for by people of his group.

At the time of his burial, his body was prepared and then placed on the ground surface at the centre of the barrow. The place of his burial was between two sand filled pits. He was laid in a flexed position on his left side with his hands on top of his head as if the mourners felt he was still suffering from his head wound. A small flint flake was placed behind his head; this flint flake may have been symbolic of his injury.

After or around the time that subject 2 was laid on the ground, a post-structure was constructed at his head and feet, burned material may also have been part of a ritual. This structure may have been to conceal the man or shelter him before he was buried under mound material.

There was also a wall 2.7m to the north-east of his body described by Kinnes and Longworth (1985, 32) as a mortuary house or enclosure made up of two walls of flat stones.

The other individuals in the mound were an adult probable female with numerous artefacts which were in a bag at her waist (3 bronze awls, 2 bone implements, jet bead, pierced nerita, belemnite, fish vertebrae and 3 cowrie shells) and another adult female with a collared urn. All three burials at this site were placed on the ground surface and it is possible that they were buried over a relatively short period of time.

## Part 2: Results

### Chapter 8: Demography

#### 8.1 Introduction

Previous assumptions on Bronze Age populations have often been based on old data and the number of burial sites. The last large scale published study of Bronze Age human remains was by Mortimer (1905) and this did not always go into detail on the skeletons or the stratigraphy. Studies by Greenwell and Mortimer have been the main source for estimating Bronze Age demography (Greenwell and Rolleston 1877; Mortimer 1905). While Greenwell's estimations of sex and age seem to compare well to the current study, antiquarians did not always have the same understanding of palaeopathology as it is a more recent discipline. This chapter presents the results of the study which answer questions on Bronze Age demography and artefact associations.

#### 8.2 Demography: *What are the demographics of Bronze Age burial practice?*

Bronze Age burials are thought to be predominantly male individuals, this especially applies to central or 'primary' inhumations; whereas later inhumations or cremations are said to be mainly women and children (Mizoguchi 1993; Brück 2009). However, these stereotypical assumptions appear to be based on work carried out by antiquarians such as Bateman, Wright, Mortimer and have never been verified.

Past studies have attempted to estimate the overall population during the Bronze Age. From the human remains in the NHM Brothwell (1972) estimated a Bronze Age population of between 20,000 and 100,000 individuals living in Britain, and McEvedy and Jones (1978, 41) suggest a population of 100,000 for England and Wales and 2,500 for Scotland using projection graphs. Where estimates are based on the human remains discovered so far, this is not likely to be correct as the majority of human remains were excavated by antiquarians such as Greenwell who only excavated a limited area of these barrows. Estimations based on the numbers of barrows and cists such as Annable (1987) would also be inaccurate as the number of individuals within each site varies greatly.

### 8.3 Inhumations

Within Bronze Age barrow studies it has often been assumed that burials of adult males are more common: within this study 203 inhumations were analysed. Of these there were 156 adults which were possible to assess for age and sex (see appendix 16.2.1). 60% of the adult inhumations were male and 31% were female, this confirms previous assumptions of male dominance in inhumations. However, this may be different in each county (see table 11).

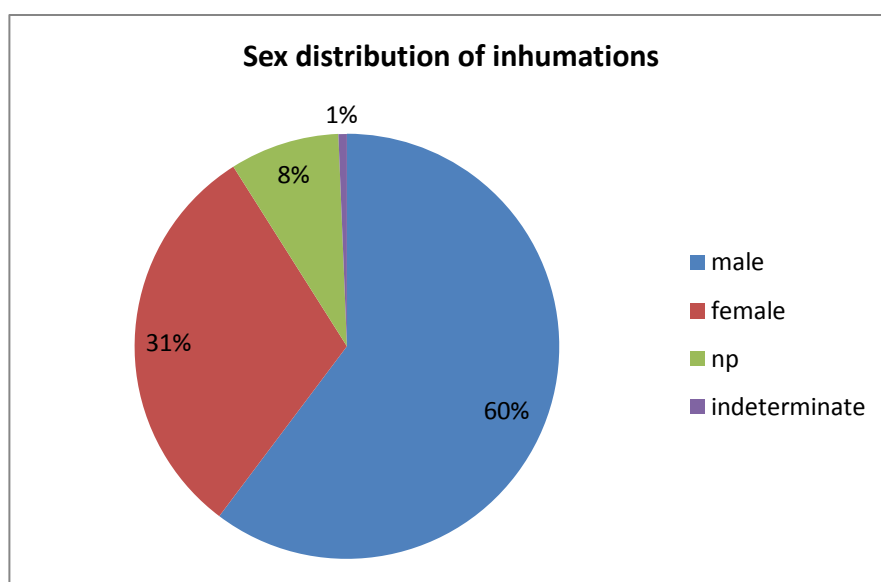


Figure 10: Sex distribution of 156 adult inhumations.

Sex	Number
Male	94
Female	48
NP	13
Indeterminate	1

Age	Number
infant	15
child	12
12 to 16	7
16 to 25	32
25 to 30	25
30 to 40	38
40 to 50	39
50+	20
NP	15

Tables 8a and 8b: Number of individuals in (a) sex and (b) age groups (inhumations).

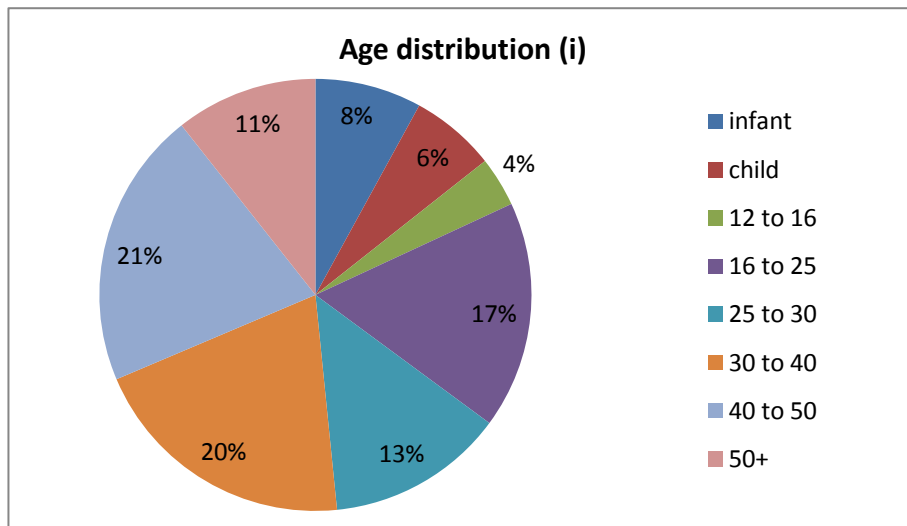
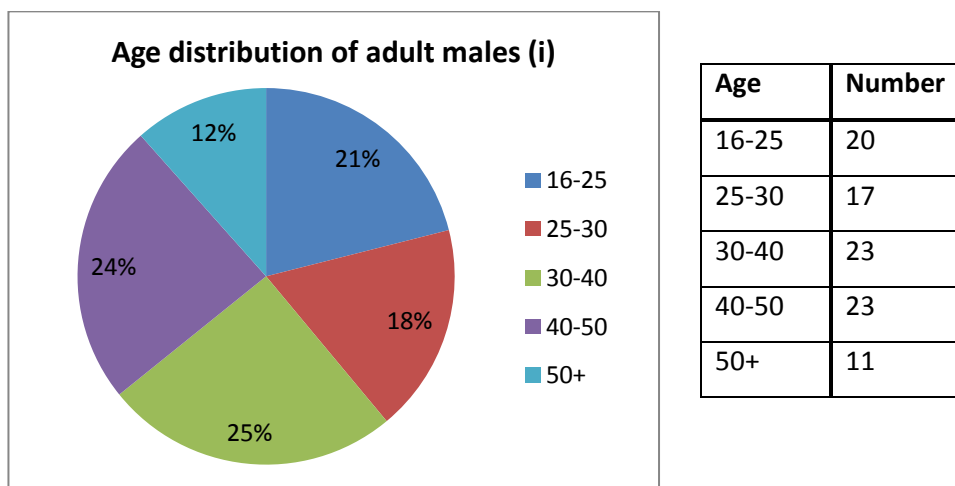


Figure 11: percentage of different age groups represented in the inhumation sample of 203 individuals.

Whilst the sex determination of the inhumed remains does indicate a predominance of adult males, the age distribution of these burials demonstrates that even though all age groups are represented, from age 30 the number of individuals increases, lowering again at age 50. To examine this in more detail, the age groups were split by sex; individuals were omitted when adult age or sex could not be ascertained. Males seem to have a steady rate of death through all age groups until age 50 when the numbers decrease.



Age	Number
16-25	20
25-30	17
30-40	23
40-50	23
50+	11

Figure 12: Percentage of adult males in each age group from the total sample of 94 aged and sexed individuals. Also Table 9: Number of adult males in age groups.

The adult female remains also show a similar pattern, but with less individuals in the 25-30 age group; more significantly there is an increase in the number of female individuals at 50+ in comparison with the adult males.

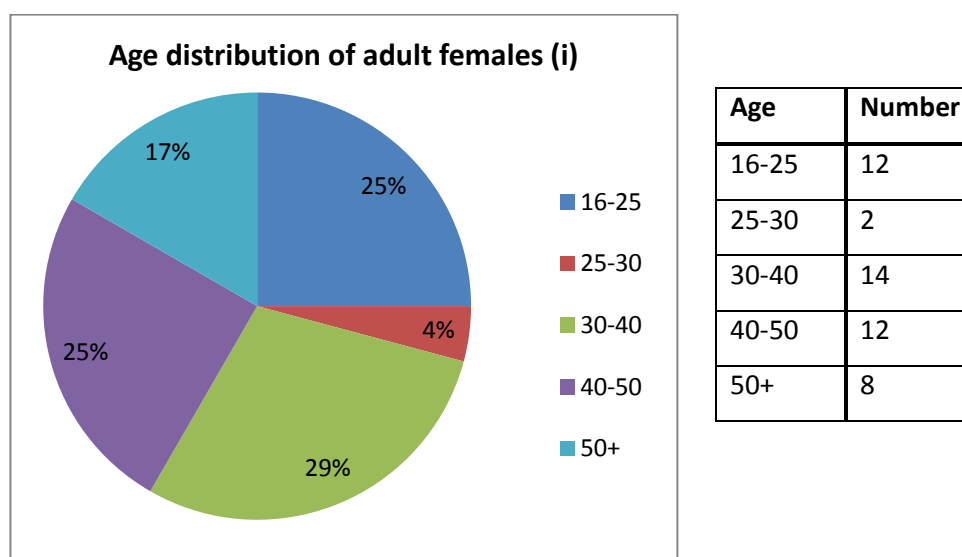


Figure 13: percentage of adult females in each age group from the total sample of 48 aged and sexed individuals. Also Table 10: number of adult females in each age group.

Overall, from the analysis of the inhumations in this study, women appear to be living slightly longer than men, although males and females have a similar percentage of deceased in the 40-50 age group. Men may have had different risks in their lives and seem to have been more likely to die as young adults. Once past this age there is more of a regular decline, similar to the females.

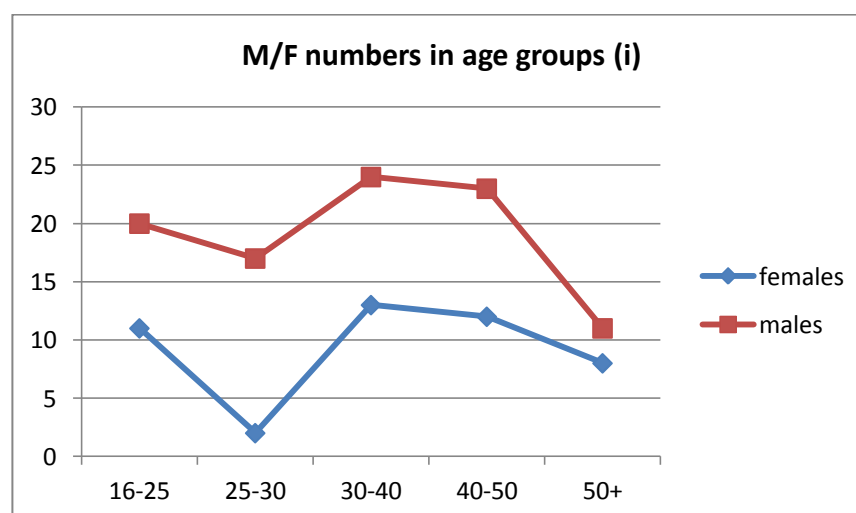


Figure 14: comparison of numbers of males and females in age groups.

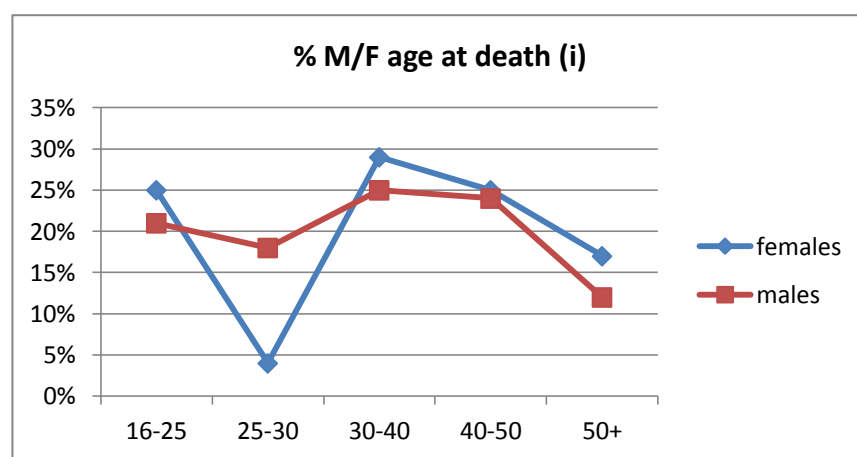


Figure 15: comparison of male and female age at death in different age groups.

### 8.3.1 Regional differences

The sex and age distributions of each area within the study were then assessed to evaluate and compare possible patterns on a narrower scale. Unfortunately, there are not enough inhumations from the north group (Cumbria) to make any statements about demography of this burial practice in this area.

Inhumations	Sex distribution of adults			Age distribution								
	M	F	NP	infant	child	adolesc	16-25	25-30	30-40	40-50+	NP	MN I
West	61%	23%	16%	23%	9%	4%	11%	16%	14%	9%	14%	44
North	37%	25%	38%	0%	0%	0%	12%	0%	37%	13%	38%	8
East	58%	33%	9%	3%	5%	3%	20%	12%	18%	36%	3%	153

Table 11: Percentages of sex and age distributions in the areas studied.

On a regional level, the predominance of male inhumations is still visible in the west and east groups. In the west group there are a greater amount of infant remains at 23% which may be a result of more recent excavations. In the east group the age which is most represented are those individuals at 40+ which are 36% of this sample. It is also possible that this is due to the limitations of ageing older individuals (Appleby 2010).

When the age distribution of the east group inhumations is examined in detail, within the male sample 24% of deaths occurred between the age of 16-25, this lessens until the deaths peak at age 40-50 (27%) then 15% of deaths are at age 50+.

Of the west group males, 40% of the deaths were at age 16-30 after this there is a sharp decrease; however the sample seems too small to indicate whether this is a genuine pattern.

Brothwell (1972, 83) gives an average lifespan of 31 for males and 29 for females of the English Early Bronze Age, with only 3.3% of Brothwell's sample being aged at 50 or more years. This compares with 11% of the inhumed remains in this study which are aged at 50 or older. The lower percentage of individuals at 50 or more years in Brothwell's study is possibly explained by Brothwell's dental wear technique (*refer to Chapter 7*).

Anthropological studies of early agriculturalists and nomadic pastoralists give an average life span of around 25 years (Ossa and Crews 2005, 66). In contradiction to this, a study by Hewitt (2003) found that semi-nomadic pastoralists had the shortest lifespan of around 31 years, mobile hunter-gatherers had a life expectancy of around 38 years and early agricultural groups had the highest lifespan of around 52 years. The different results of these studies demonstrate that results are likely to be different for different groups depending on economic and environmental variation. However, the Hewitt (2003) study demonstrates that early agriculturalists can reach a 50 year lifespan.

The east sample is used to examine the demographic patterns of age, sex and death more closely. Within the female sample from the east group, 20% died aged around 16-25, then there is an increase of deaths between ages 30-40 (29%), this amount decreases over the next two age groups but 5% more females survive after 50 years of age than males. It is possible that the early adult female deaths may represent those individuals who have not survived childbirth. Chamberlain (2006, 55) gives a reproductive age range from around 14 (although onset of menarche varies depending on nutrition) to around 50 years even in anthropological groups. The height of fertility in early agricultural societies is in the 20s with a slow decline after this (Chamberlain 2006, 68). This may be reflected in the age-at-death pattern in this sample.

In comparison the male sample shows a similar peak in deaths but this occurs later, between the ages of 40-50, and there seems to be less male individuals surviving past 50 than females. The female sample displays lower mortality after age 40.

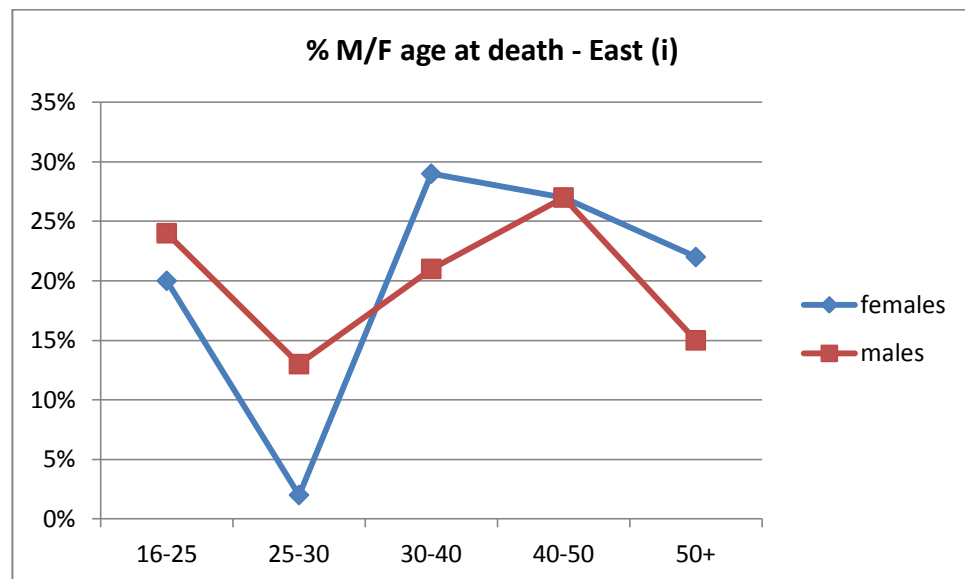


Figure 16: male and female age at death from Yorkshire inhumations

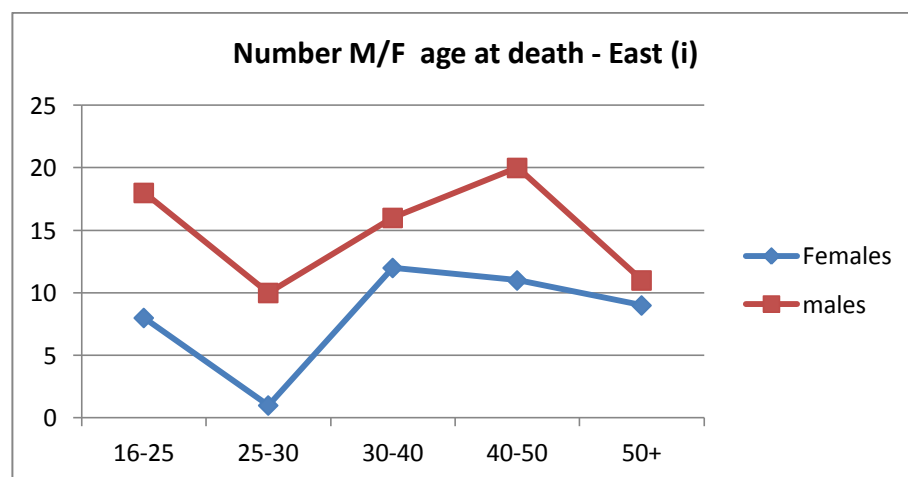


Figure 17: number of males and females in age groups from Yorkshire sample

The age patterns discussed from the overall inhumation sample are still true in the east sample. Women in the Early Bronze Age in Yorkshire were more likely to survive to a greater age than men.

As past studies of the Early Bronze Age have been balanced towards andro-centric interpretations this new development could change our views of gender, age and status in the Early Bronze Age.



### 8.3.2 Inhumations and grave goods

Aspects of identity such as status have often been assumed from the quality or number of artefacts associated with burials. Out of the 203 inhumations it was possible to assess 115 aged and sexed inhumations for association with grave goods. Overall there was only a small number of adolescents and juveniles so these do not indicate any pattern, but they do show that juveniles and adolescents were at times associated with artefacts. This is confirmed from examples where juveniles are associated with artefacts from the literature, for example, an adolescent at Folkton was associated with the elaborately decorated Folkton 'drums' which are the single example of such objects.

Adult males have in the past been thought to be more commonly 'high status' from the associated artefacts (Gilman 1981; Kristiansen 1991), this seems problematic; how do we judge the level of status implied from such artefacts? It is usually assumed that artefacts made from gold, jet and amber are high status, but not all these materials are common in the same areas, and it may be our assumptions that these objects are high status.

When comparing the number of adult males and females with and without grave goods separately, it is possible to demonstrate that a higher percentage of women have associated grave goods than men. This is opposite to previous andro-centric assumptions (see figures 18 and 19).

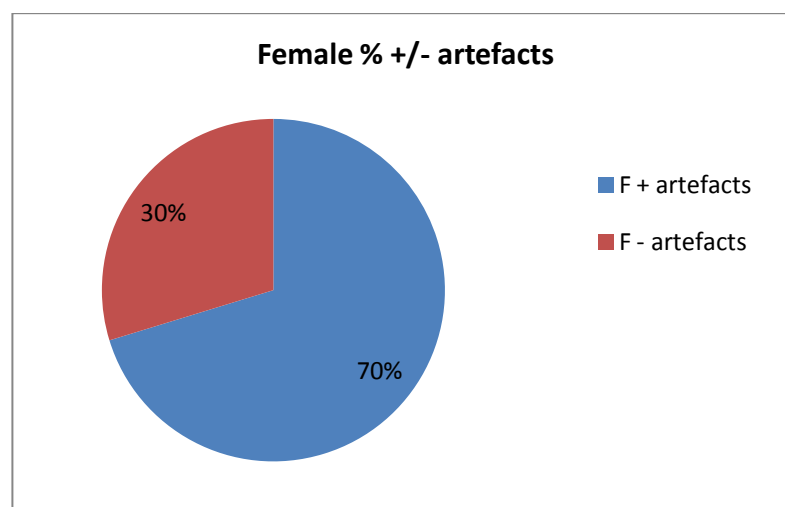


Figure 18: Percentage of females with and without artefacts

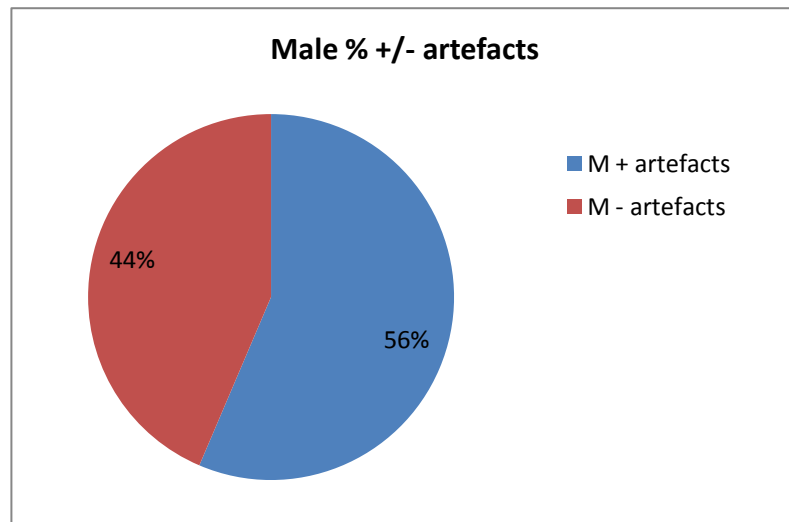


Figure 19: percentage of males with and without artefacts

F + artefacts	26	M + artefacts	44
F - artefacts	11	M - artefacts	34

Table 12: the number of males and females with and without artefacts (not- including pottery).

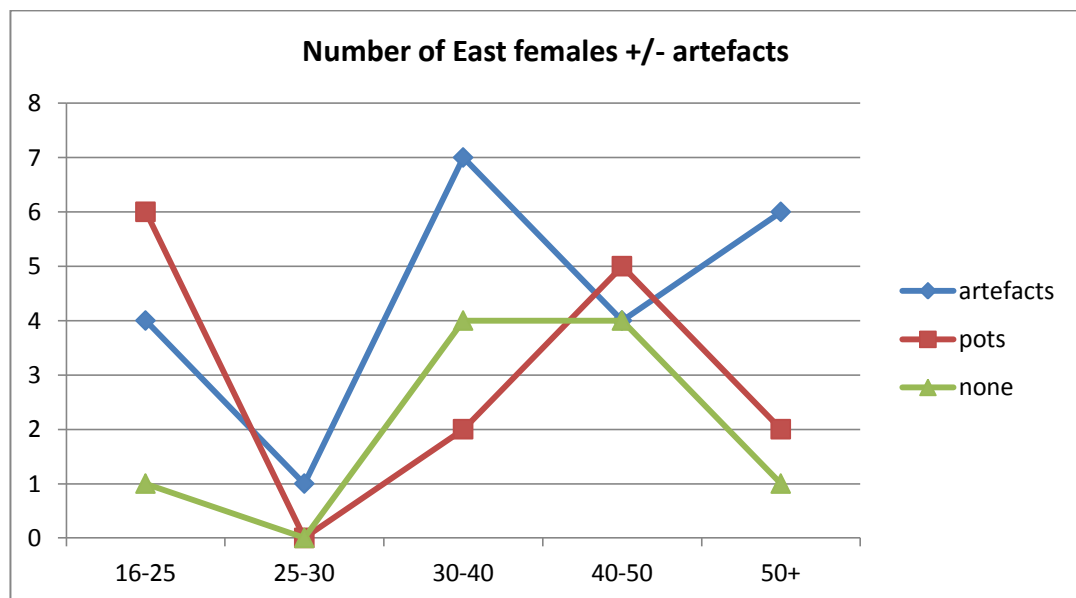


Figure 20: number of females in each age group with different artefact associations

Correlation of sexed age groups with artefacts reveals that the association of womens' age groups with non-ceramic artefacts is reasonably consistent, but there is a greater number of non-ceramic artefacts with females aged 30 and above. There is a greater association of females and pottery (compared to males) but especially the young adult females and those aged in the 40s.

Sex	Pot	Bone pin	Bronze dagger	Bronze awl	Flint knife	Flint scraper	Axe	Other flints	Animal bones	Beads/ pendants/ buttons	Quartz	Bronze ring or bracelet	Arrow-heads
Males	16	3	3	0	6	5	2	10	3	5	2	1	2
Females	17	4	0	6	1	4	0	5	5	3	1	2	1

Table 13: The number of males and females with artefact types (i)

Demographic group	Beaker	Food Vessel	Collared Urn	Acc Vessel	Un. I.D./ other pot
Males	2	10	0	0	4
Females	3	11	1	1	1
Unsexed adult	2	1	0	0	0
Adolescent	0	1	0	0	0
Child	0	2	0	0	0

Table 14: The number of aged and sexed individuals associated with different pottery types (i)

	Bone pin	Pot	Beads	Bronze awl	Axe	Flint knife	Stud	Animal bones	Misc flint
Females	3	9	1	2	1	2	2	4	6
Males	2	4	0	0	0	2	0	1	2

Table 15: The number of males and females with artefact types (c)

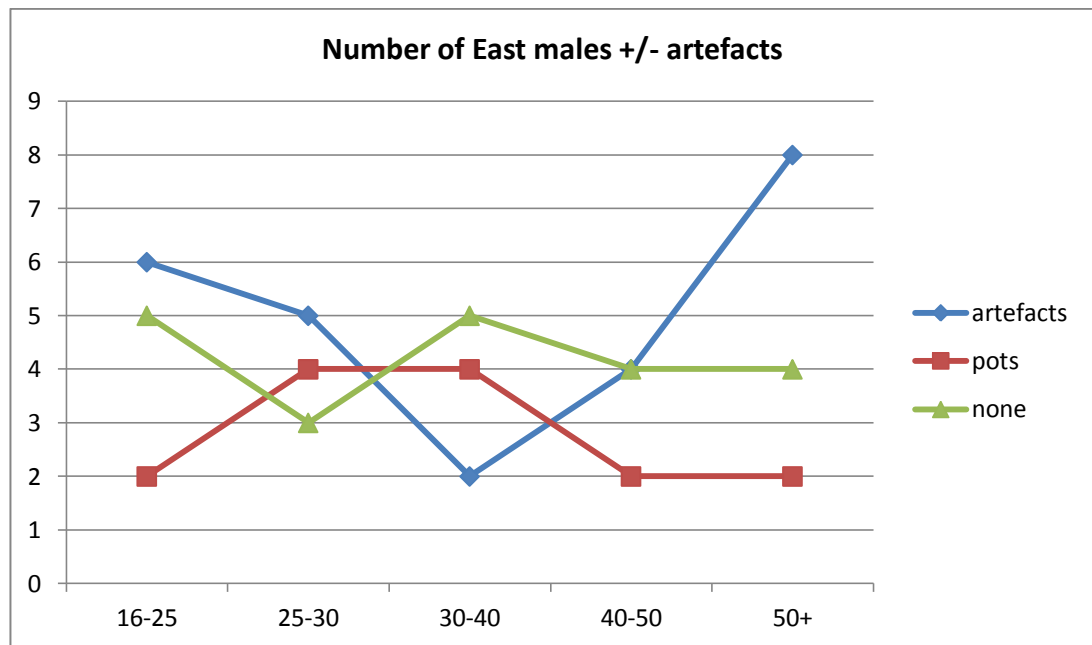


Figure 21: Number of Yorkshire males in age groups and object associations

When looking at aged males and artefact associations, the majority of males with non-ceramic artefacts are either aged 16-25 or over 50. Non-ceramic artefacts are also most commonly associated with males aged 40+ and also are quite common with young adult males. Young adult males and those aged 30-40 are most commonly not associated with any artefacts.

From the whole inhumation sample, there were three females and two males with multiple objects, all from Yorkshire. Three of the females are aged over 40, one is 16-20.

Site	Age	Artefacts
Folkton 180 (71)	16-20	Food vessel, scraper, bone beads, bronze awl and pig and goat bones
Cowlam 144	40-50	Scraper, two or three pots represented by sherds of Beaker, antler tine, ox bones
Langton 94 (2)	40-50+	3 bronze awls, one boars tusk, one beaver tooth, one jet bead, one pierced nerita, one belemnite, one fish vert, three cowrie shells

Table 16: Female inhumation burials with multiple objects

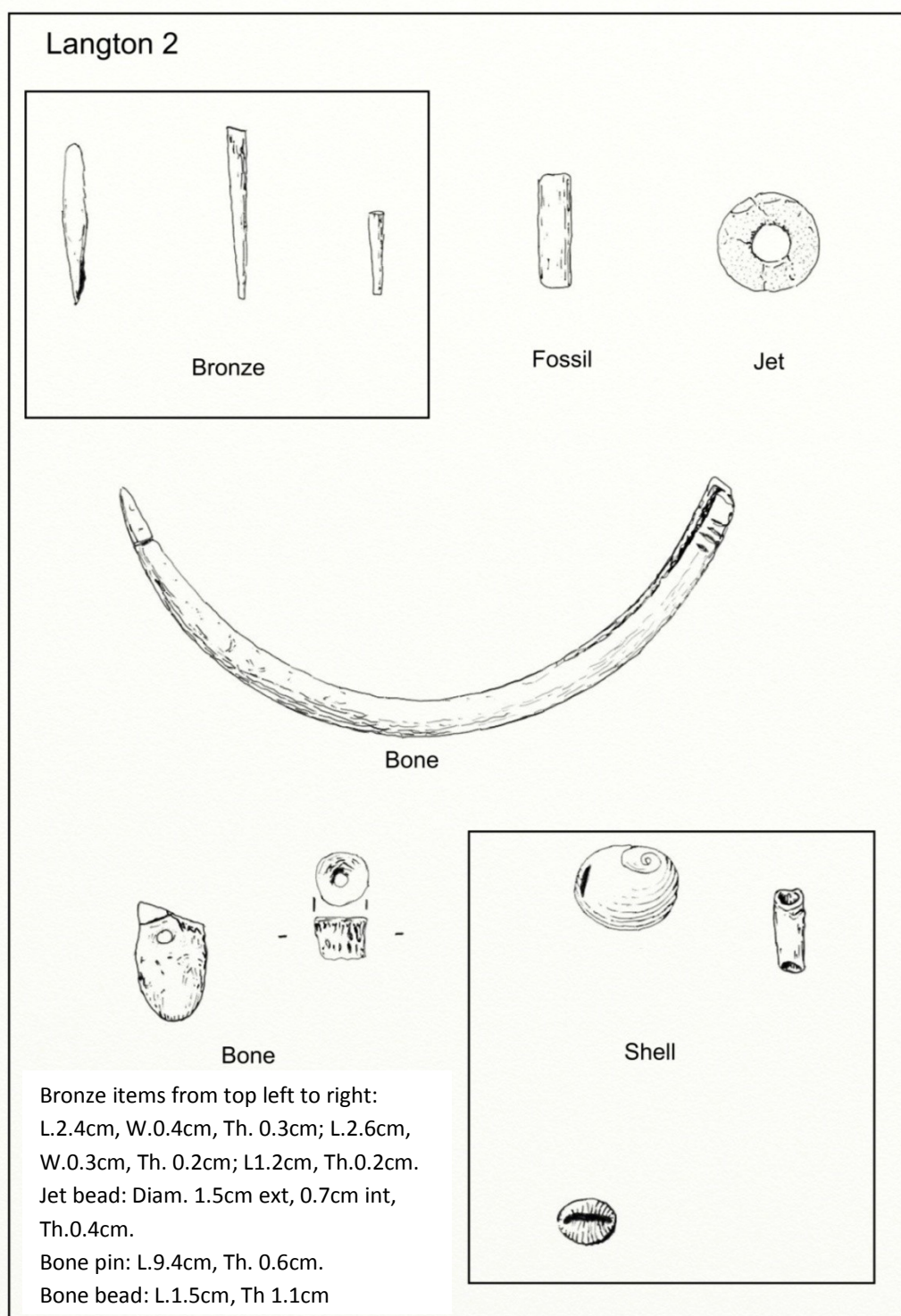


Figure 22: Objects associated with Langton individual 94, barrow 2, burial 2 (after Kinnes and Longworth 1985). For diagrams of objects associated with Folkton 180 see Figure 5.

The two males with multiple objects do not have as many objects as the females; these individuals are also older adults.

Site	Age	Artefacts
Helperthorpe 125 (41)	35-45	Flint knife, antler tines at feet and head
Rudstone 169 (68)	45-55	Bronze knife, axe hammer and flint

Table 17: Male inhumation burials with multiple objects

#### Helperthorpe 41

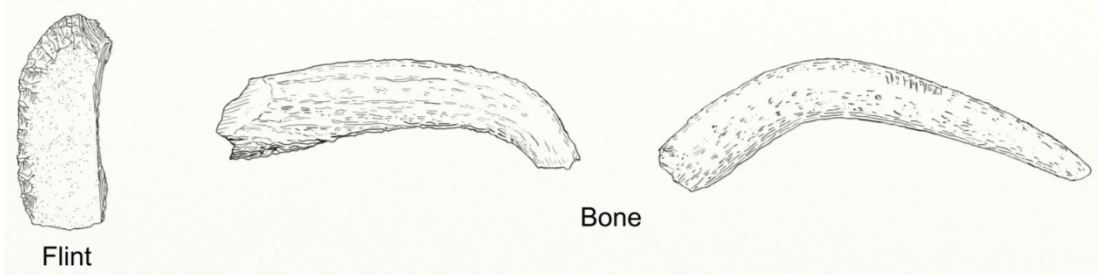


Figure 23: Objects associated with individual Helperthorpe 125, barrow 41, burial 2 (after Kinnes and Longworth 1985). Flint: L.5.0cm, W.2.5cm, Th.0.6cm. Bone object on left: L.16.5cm, Max Diam 2.9cm. Bone object on right: L.20.0cm, Mx Diam 3.1cm.

#### Rudstone 68

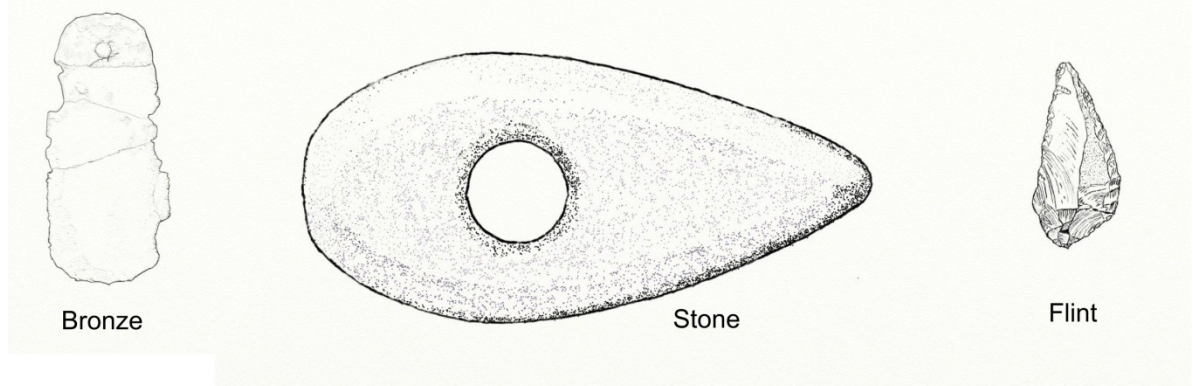


Figure 24: Objects associated with individual Rudstone 169, barrow 68, burial 8 (after Kinnes and Longworth 1985). Bronze artefact: L.6.6cm, W.3.0cm, Th.0.2cm. Stone axe-hammer: L.13.5cm, W.6.3cm, Th.4.8cm. Flint: L.4.3cm, W.2.0cm, Th.1.2cm.

A chart comparing male and female age groups from the whole inhumation sample with the type and number of objects accompanying burials gives some patterns of gendered objects (see appendix 16.2.3 also tables 13-15). Within the study, objects which are only associated with males are: bronze daggers and axes; those which are more common to females are bronze awls, types of earrings and studs which may also have been ear ornaments (see figure 25). Flint knives are more often with males but an older female at Green Howe was also associated with one.



Figure 25: a) Bronze awl, b) clay stud; these examples from Whitelow, Lancashire (Courtesy of Bury Art Gallery and Museum).

The majority of object types are associated with both males and females, these include: pottery, bone pins, flint scrapers, miscellaneous flint flakes, animal bones, beads, bronze rings and arrowheads.

The items with the most uses (presumably) are knives and daggers; these are predominantly associated with adult males. Other items which may have been for everyday use for both males and females include scrapers, arrows and flint knives.

<b>use/object</b>	arrow	axe	knife	dagger	scraper	awl
<i>violence</i>	X	X	X	X		
<i>practical</i>	X	X	X	X	X	X
<i>status</i>	X	X	X	X		X
<i>symbolic</i>	X	X	X	X		
<i>cutting</i>			X	X		
<i>butchery</i>			X	X	X	
<i>fastening</i>						X
<i>contain</i>						
<i>adornment</i>		X				
<i>eating</i>			X	X		
<i>hunting</i>	X		X	X		
<i>boring</i>						X
<i>material</i>						
<i>gathering</i>						
<i>storage</i>						

Table 18: part 1 - Objects found with burials and their possible uses

<b>use/object</b>	pin	animal	buttons	earrings	beads	pots
<i>violence</i>						
<i>practical</i>	X	X	X			X
<i>status</i>		X		X	X	X
<i>symbolic</i>		X		X	X	X
<i>cutting</i>						
<i>butchery</i>						
<i>fastening</i>	X		X			
<i>contain</i>						X
<i>adornment</i>	X	X	X	X	X	
<i>eating</i>		X				X
<i>hunting</i>						
<i>boring</i>	X					
<i>material</i>		X				
<i>gathering</i>						X
<i>storage</i>						X

Table 18: part 2

Daggers, knives and axes have both practical use in terms of cutting meat and wood as well as a use for possible violence. Bronze awls would have been used for working on animal skins; flint scrapers and other flints are for practical uses. Pottery would have been used as containers and for cooking and brewing. Beads and jewellery are for personal adornment, animal bones may represent the remains of food or totemic symbols.

Even though some items have been correlated in table 18 with symbolic, status associated and practical uses most objects could of course be used for symbolic and/or practical reasons, this is why context is so important.

Although there are only small numbers of aged and sexed individuals with specific objects, flint knives are predominantly associated with males aged 40 and above, there do not appear to be any other specific objects associated with age groups (see appendix 16.2.3). A larger sample of known aged and sexed inhumations with artefacts would be required to take this further.



#### 8.4 Cremated remains

In past studies, cremated individuals have been thought to be of lower status and more commonly female adults. 109 cremation deposits were analysed, these deposits result in an MNI of 129 individuals. It was not possible to assess the sex of 60% of these individuals, of the 40% remaining, 26% are female, which does fit with previous ideas of the predominance of female cremations. However, as there is such a large amount of individuals which were not sufficiently well preserved for sex estimation; it is not possible to estimate how many males there really are within the cremation sample (see appendices 16.3 and 16.3.1).

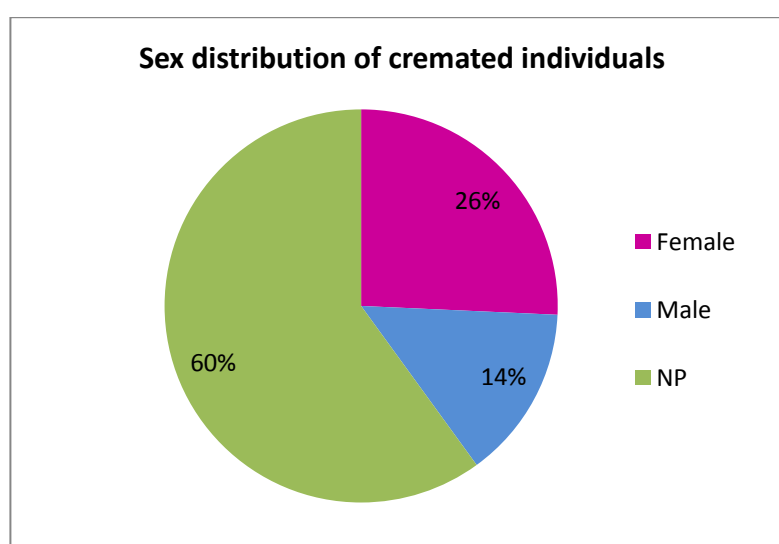


Figure 26: Sex distribution of cremated remains.

Sex	Number
Male	16
Female	29
NP	66

Table 19: Number of cremated adult individuals in sex categories

Due to the destructive nature of the cremation process it is more difficult to estimate the age of cremated individuals. Out of the 129 cremated individuals, it was not possible to assess the age at all for 18 individuals and it was only possible to say that a further 23 individuals were adult. This gives a total of 41 individuals which could not be aged.

Age group	Number
Infants	8
Children	14
Adolescent	10
Young adult	18
Y to Mid adult	15
Mid adult	13
M to Old adult	9
Old adult	2
Not possible	18
Adults*	23

Table 20: Number of individuals in each age group (cremations)

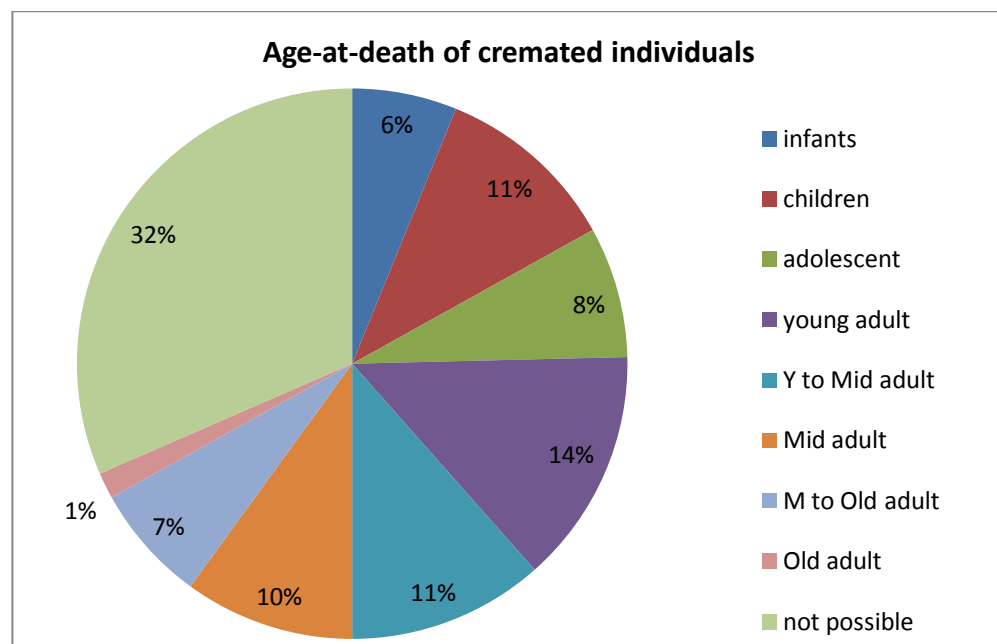


Figure 27: Percentage in each age group of the 88 cremated individuals which could be aged, Not Possible includes \* from Table 15.

Overall there is a slight predominance of young adults, otherwise the number of individuals are quite evenly spread through the age groups. There is a lack of individuals in the oldest age group; this is probably due to problems with aging cremations (McKinley 2000).

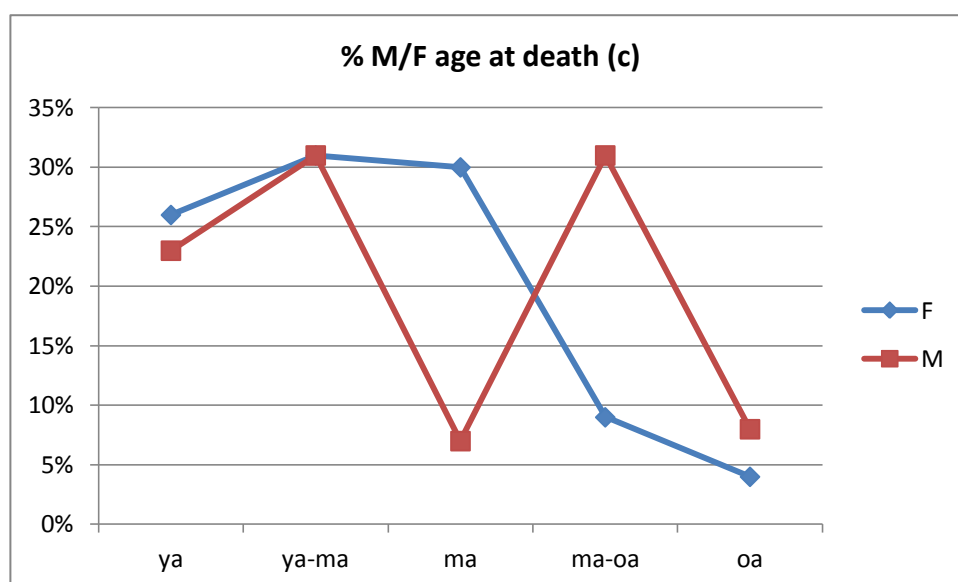


Figure 28: age at death of cremated males and females

There is a similar percentage of deaths in males and females in young to middle age, the percentage of females drops during the young-middle age group. The percentage of males drops less abruptly after young-middle age and then rises at middle to old age and drops again; both males and females have a similar percentage of old individuals. There are less females after middle age and the percentage of males increases.

#### 8.4.1 Cremations and artefacts

Out of all the cremation deposits 70 were associated with grave goods, out of 45 sexed individuals only six female individuals did not have grave goods and there were six males without grave goods. Overall there were 49 deposits with pottery and 38 deposits with other objects. Eighteen deposits had both pottery and other artefacts. There were a greater percentage of cremated female individuals with grave goods at 79%, compared to 62% of males with grave goods. A greater number of female individuals were also associated with non-pottery artefacts.

Three examples of objects found as part of cremation deposits can be seen below in figures 29 to 31. All three show alterations caused by heat.



Figure 29: Bone bead from Gallowsclough, Cheshire.



Figure 30: Bone pin from Holmrook, Cumbria



Figure 31: Flint objects from Cleulow, Cheshire

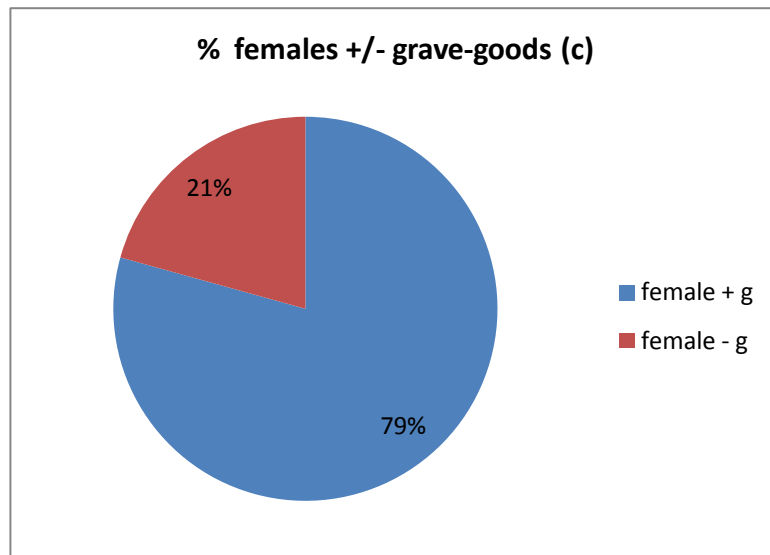


Figure 32: Percentage of female cremations with and without grave-goods

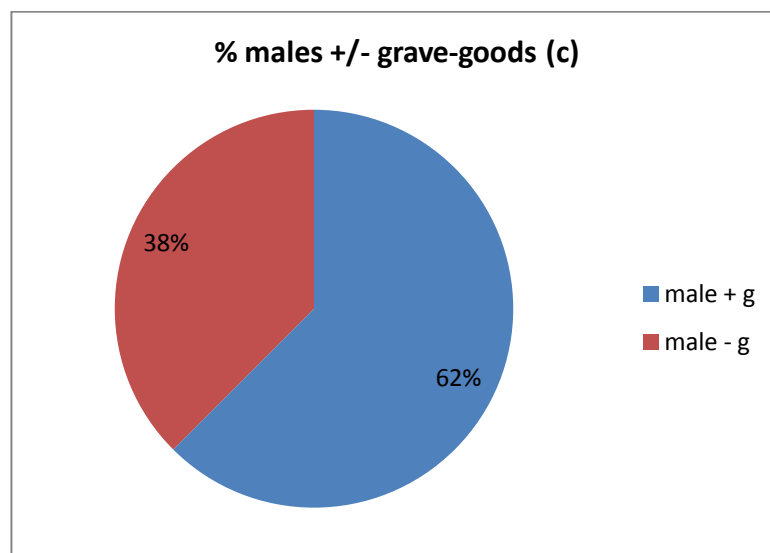


Figure 33: percentage of male cremations with and without grave goods.

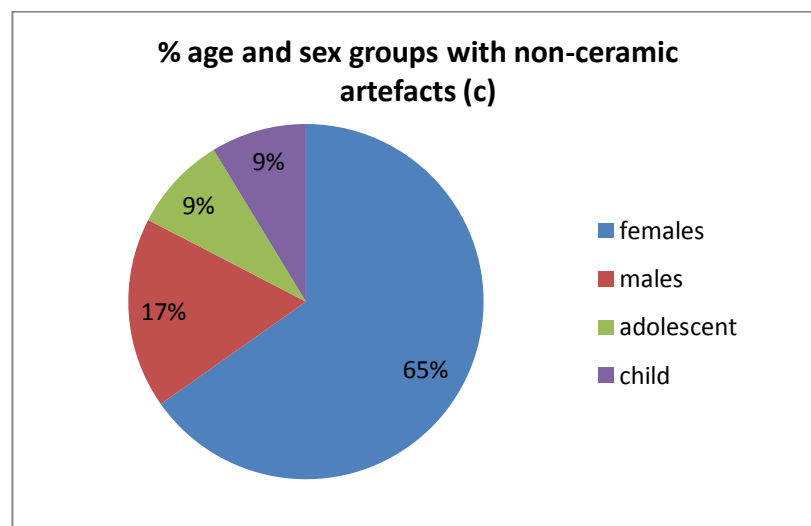


Figure 34: the percentage of sex and age groups with non-pottery artefacts

This confirms the inhumation grave good pattern where females also were more often associated with artefacts. Also there was a much larger percentage of adult females with non-ceramic artefacts than males and younger individuals.

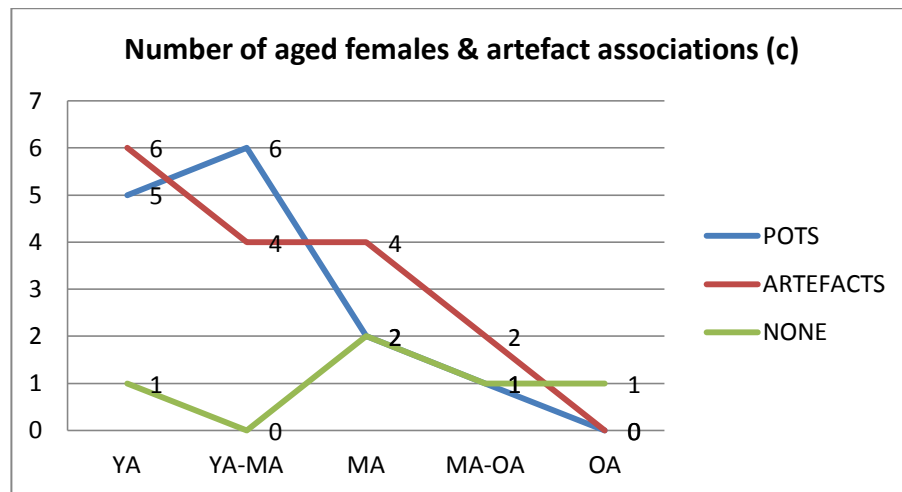


Figure 35: The number of aged females and artefact associations

When the female cremated remains are separated by age groups and correlated with grave-goods, non-ceramic artefacts peak with individuals at the young adult age group (16-25) and pots at the young to middle age group (25-40). There are no grave goods with individuals in the old age group but it seems likely that this is due to the lack of visible older individuals within the cremated sample (see appendix 16.3.3).

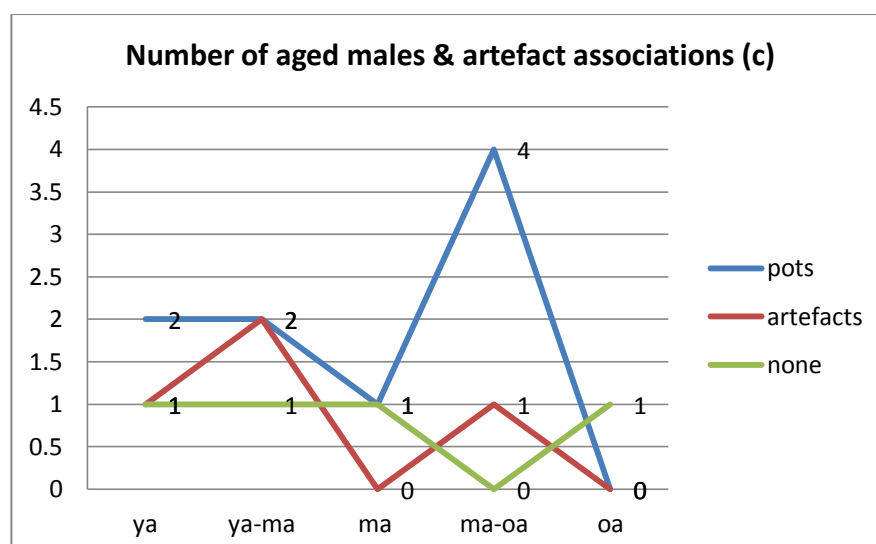


Figure 36: The number of aged males and artefact associations

The males grouped by age with artefact associations is too small a sample for interpretation, but there are more males in the middle to old age group which are associated with pottery.

#### 8.4.2 Regional patterns

Cre mati ons	Sex distribution of adults			Age distribution									
Area	M	F	NP	infant	child	adoles	YA	Y TO MA	MA TO OA	MA TO OA	OA	N P	MNI
Nort h	24 %	24 %	52 %	14%	16%	5%	16 %	14 %	5%	8%	0%	22 %	38
East	11 %	22 %	67 %	0%	10%	10%	20 %	0%	10 %	20%	0%	40 %	10
Wes t	14 %	26 %	60 %	2%	9%	9%	9% 9%	12 %	4% 6%	6%	2%	47 %	81

Table 21: percentages and MNI of sexed and aged cremations in each area

The east sample has too few cremations for this area to be assessed for any demographic distribution for this burial practice. In the west group there are a greater number of females than males. In Cumbria, differing to the overall pattern the sexes are equally distributed. The cremated remains of children are especially well represented in the north group. Although infants are most well represented here most of these individuals were residual remains or remains which accompanied adult cremations.

#### 8.5 Demographic conclusions

To sum up there is a predominance of adult male inhumations in both the east and west groups; most of these individuals died between the ages of 30 and 50. There are more males in the inhumation sample than females; figure 41 shows the percentage of males and females combining both samples.

The larger number of adult male inhumations may indicate either that round barrows were a preferred burial place for adult men, or (as a large proportion of the inhumation sample resulted from antiquarian activities) perhaps the sample is skewed due to antiquarians' preference for collecting 'fine specimens' of adult males.

There are only a small number of sites in the study with inhumations which were not excavated by antiquarians. Of these sites, table 22 (below) shows the different numbers of male and female burials.

Site	Number of Males	Number of Females
Green Howe	5	2
Cowlam 3	2	4
Hindlow	At least 5	1 definite

Table 22: Sites in the study which were excavated relatively recently: distribution of M/F

Mortimer's (1905) overall study gives a potential 558 individuals. The number of individuals which Mortimer identifies as male or female only makes up a small part of the total excavated; this is not particularly revealing as to any potential patterns in males and females.

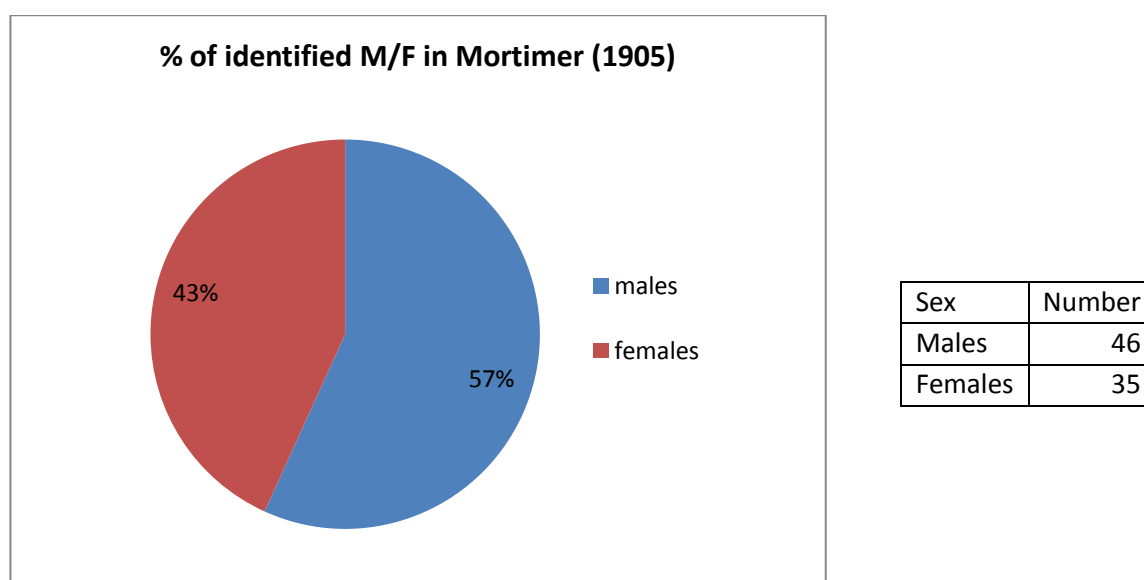


Figure 37: The percentage of males and females identified in Mortimer (1905). Table 23: Number of males and females identified in Mortimer.

More recent excavations in the literature (Christie 1967; Bellamy 1992; French 1994; Green et al. 1982) show similar sex distributions to those within the study. Of the 26 inhumation burials from Barrow Hills monument complex (Barclay and Halpin 1998) 73% are male, 27% are female.



Within the inhumation sample, the majority of individuals are from the NHM Greenwell collection. Generally Greenwell's sex assessments are the same as in the current study, the only difference was in one male individual from Cowlam 57 (NHM 146). This individual was estimated by Greenwell to be female. This individual was an adolescent/young adult which may be the cause of this difference. From the remains in the sample Greenwell has not identified more males than in this study.

This cannot account for remains which may not have been removed from sites by Greenwell, or his choice in which remains which were collected. However, a comparison of the remains in the study from Greenwell sites, with the totals of MNI and numbers of males and females of those studied against Greenwell's totals might be more likely to demonstrate any bias.

Sites in this study from BB	MNI analysed with context	Males analysed	Females analysed	MNI from BB	Males in BB	Females in BB
Sherburn 13	2	1	1	2	1	1
Sherburn 9	2	1	1	3	1	1
Ganton 21	6	3	1	13	4	3
Ganton 22	3	1	0	6	2	1
Castle carrock 163	1	1	0	1	1	0
Ashfell 167	1	1	0	1	1	0
Langton wold 2	3	1	2	3	1	2
Heslerton wold 4	1	1	0	2	0	0
Sherburn 7	1	0	1	10	0	1
Ganton 27	2	2	0	4	3	0
Ganton 28	2	2	0	15	6	1
Willerby 33	2	1	1	9	2	2
Willerby 34	2	1	1	5	1	1
Willerby 38	1	1	0	2	1	0
Helperthorpe 41	1	1	0	4	1	0
Weaverthorpe 43	4	2	1	12	4	1
Weaverthorpe 44	1	1	0	5	1	1
Weaverthorpe 46	2	1	1	7	3	1
49	4	2	0	7	2	1
Cowlam 52	1	0	1	1	0	1
Cowlam 53	1	0	1	1	0	1
Cowlam 57	7	3	3	16	6	3
Cowlam 59	1	1	0	5	2	0
Rudstone 61	3	2	1	6	3	2
Rudstone 62	1	0	1	11	4	2
Rudstone 63	5	3	2	15	4	4
Rudstone 68	1	1	0	9	4	0

Rudstone 66	2	0	1	7	1	2
Folkton elf howe	1	1	0	4	2	0
Folkton 70	4	2	0	13	4	3
Folkton 71	5	3	1	14	6	1
Cherry burton 72	1	1	0	1	1	0
Goodmanham 92	1	1	0	2	1	0
Goodmanham 94	1	1	0	1	1	0
Goodmanham 97	1	0	1	1	1	0
Goodmanham 99	1	1	0	9	4	1
Goodmanham 101	1	1	0	3	1	1
Goodmanham 103	2	1	1	2	1	1
Goodmanham 104	1	1	0	2	1	1
Goodmanham 105	1	1	0	1	1	0
Goodmanham 110	1	1	0	3	3	0
Goodmanham 111	4	0	4	9	2	3
Goodmanham 112	1	0	1	4	0	2
Goodmanham 113	5	2	2	6	4	2
Goodmanham 114	1	0	0	2	0	1
Goodmanham 115	1	0	1	4	2	1
Goodmanham 117	2	0	1	2	1	1
Goodmanham 118	1	0	0	1	0	0
Goodmanham 120	1	1	0	2	2	0
Goodmanham 121	3	2	0	5	1	2
Londesborough 123	1	1	0	1	1	0
Cowlam 56	1	0	0	2	2	0
Total	105	55	32	276	101	52

Table 24: Number of individuals, males and, females analysed from sites in the study compared to those in British Barrows (Greenwell and Rollestone 1877)

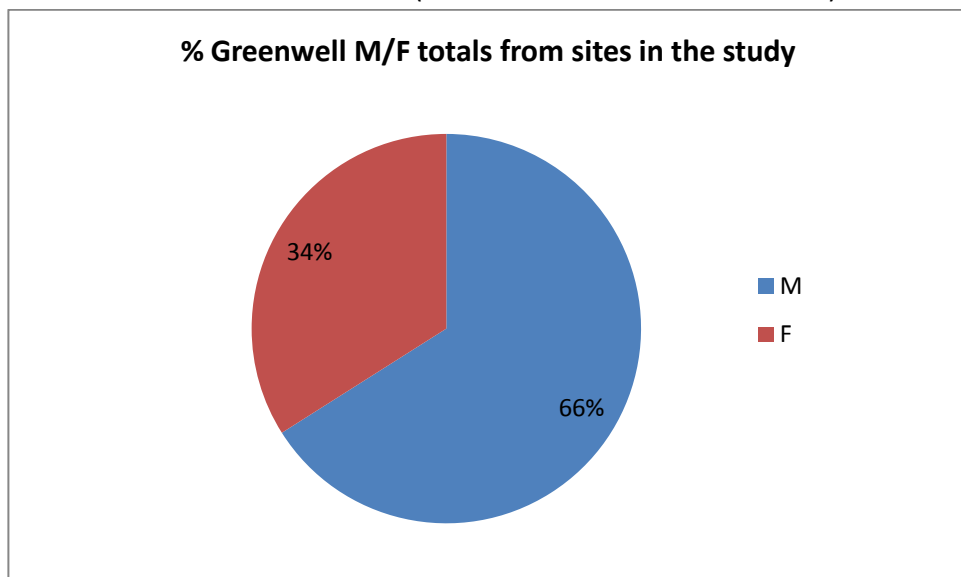


Figure 38: The percentage of males and females from the Greenwell sites in the study, including those which have not been analysed.

Figure 38 demonstrates that the greater number of male burials in this study is not likely to be due to any antiquarian selection bias. The trend towards a greater number of males is still visible within the totals from Greenwell's excavations. Although this will also depend on how much of each site was excavated and whether any burial features were missed.

Whilst there are variations in each individual site, the overall numbers still indicate a greater number of adult males.

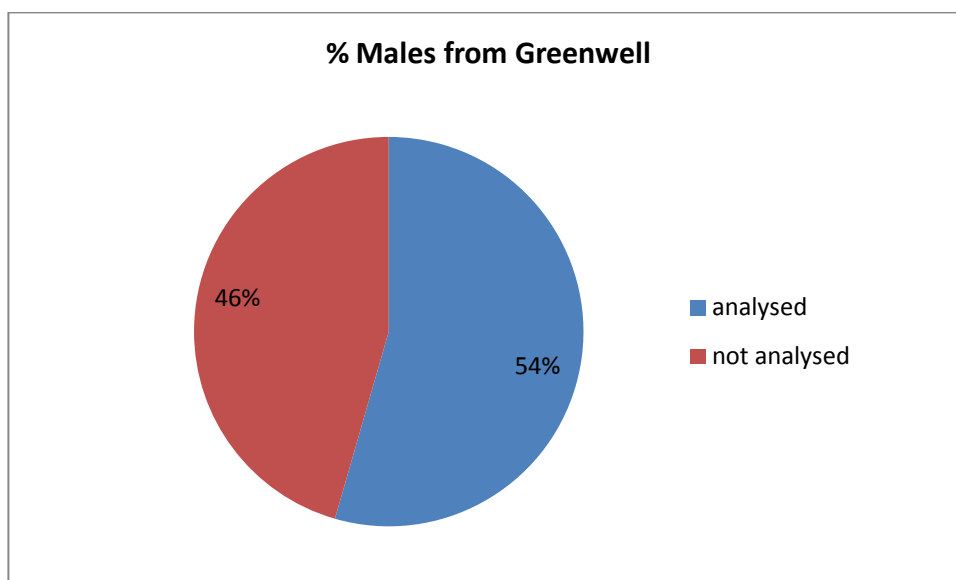


Figure 39: The percentage of males from the Greenwell sites in the study which have been analysed

Figures 39 and 40 demonstrate how the percentage of analysed individuals in the study compare to the total of individuals discussed in Greenwell and Rolleston (1877).

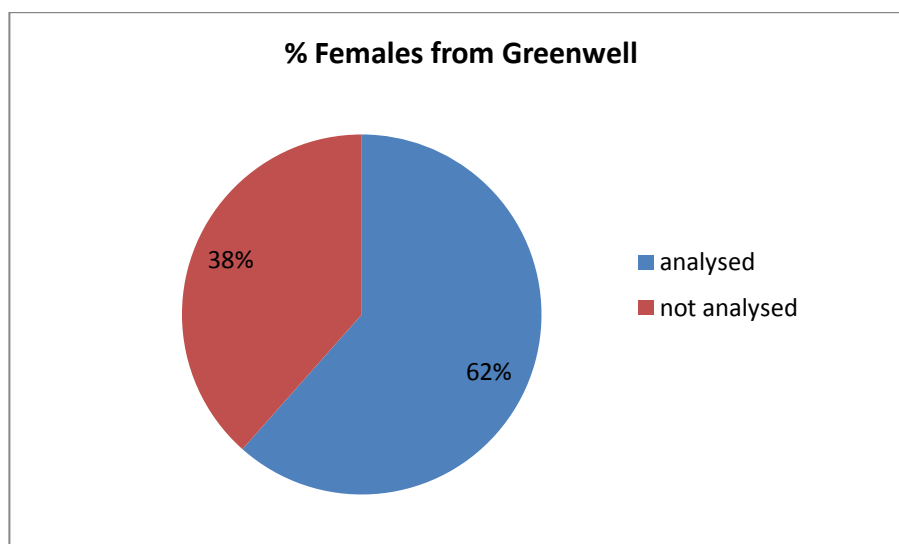


Figure 40: the percentage of females from the Greenwell sites in the study which have been analysed.

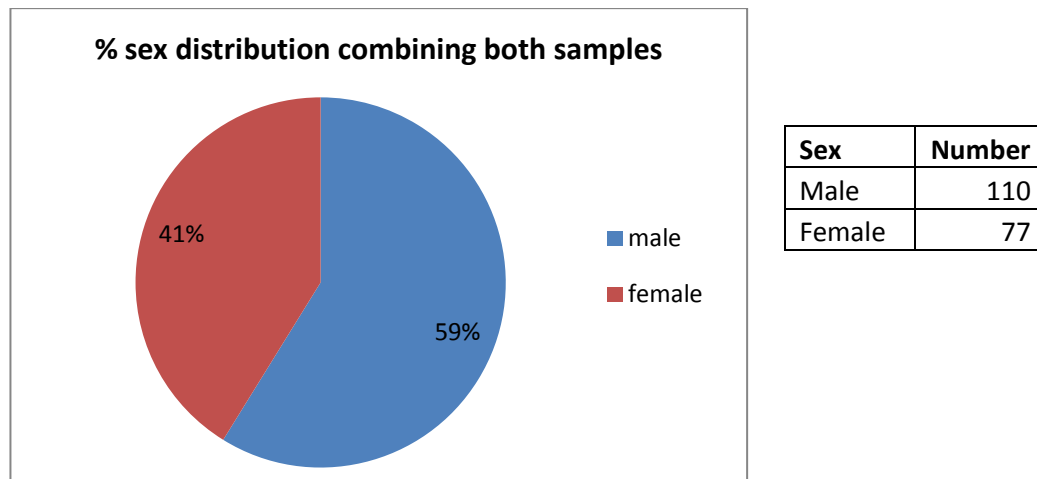


Figure 41: the percentage of males and females from both samples. Table 25: the number of males and females from both samples

There are more females surviving past the age of 50 than males. While the higher survival rate of women could indicate that men had different risks in their lives there could also be a genetic aspect. According to (Moore 1988) in most countries around the world, women have an average increased lifespan of up to seven or eight years. While there are probably genetic factors in this difference, most researchers refer to the more hazardous environment (occupation) of the male, or a less successful adaptation of males in the interaction of environment (Moore 1988, 68).

There is also an overall predominance of female individuals which were cremated, however due to the large amount of cremation deposits which were not possible to sex this cannot be relied on. The north cremation sample has a more even distribution of males and females.

There is an even spread of age groups within the cremated remains, although the cremated remains of children are well represented in Cumbria and most juvenile individuals were deposited with adults.

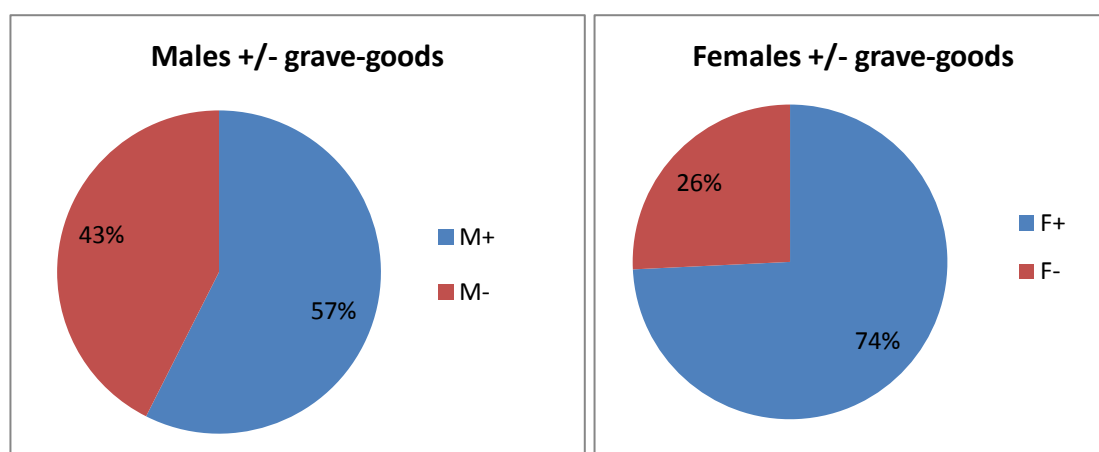


Figure 42: percentages of males and females with and without grave-goods from both samples

Both cremated and inhumed individuals were more likely to be associated with grave goods if they were female; this is opposite to previous assumptions if objects are taken as an indication of status.

Older female inhumed individuals were also more likely to have grave goods; young adult and older males were most commonly associated with artefacts in the male inhumation sample.

Overall these results may alter our views of Bronze Age burials; the demographic and artefact data reveals identities and/or representations of women to be important. The importance of older individuals is also visible in the number of these individuals which are present in the inhumation sample. This demonstrates which identities should be further investigated and discussed.

### ***Osteobiography 3: Cowlam barrow 3, grave 2, burial 1***

Subject 3 was an older adult female aged around 40-50 at death, she was around 5'5 to 5'7 in height (163cm). During her childhood between the ages of three and four she had suffered two episodes of disturbance to her development which left defects on her front teeth. It is likely this was caused by a systemic disturbance such as a period of illness or malnutrition as opposed to a single tooth defect which would indicate a local trauma or infection (King et al. 2005, 547). She may have suffered a time without enough food, perhaps during a winter.

Subject 3 survived to progress through adulthood and is likely to have had children. Through the woman's life, while she had grown older and her body became weaker, she had survived numerous physical hardships including serious injury. She had survived a traumatic injury to the top of her head which may have been caused by accident or violence; this wound had healed before the woman's death. In prehistoric peoples, the main cause of head injuries was interpersonal or inter-group conflict (Cohen et al. 2012). However, blunt force trauma can occur from accident, games or ritual combat (Byers 2005; Owens 2007; Tung 2007). The woman's wound appears to have been from above and is likely to have been from a club of some form (see chapter 9).

This injury may have had neurological impacts on the individual. An injury to the brain can cause chronic headaches, dizziness, poor concentration as well as problems with memory, speech and movement. These problems may continue for months after injury (Kraus and McArthur 2006; DeKosky et al. 2012). The Cowlam woman would have been cared and provided for while she recovered from this injury.

Subject 3 also had unhealed fractures to her lower spine as well as fusion of two cervical vertebrae (neck region) and Schmorl's nodes to some of her vertebrae. The unhealed fractures to the lumbar vertebrae may have occurred around the time of death. The individual had osteoarthritis to the upper spine, particularly the cervical area. She may have spent some of her life carrying heavy loads or suffered a trauma to the neck which led to decreased flexibility in this area.

The woman also had interesting alterations to the bones of her hands; a distal phalanx had lost a tip, the joint surfaces and shafts of the metacarpals and phalanges had extra bone formation (see chapter 9 for detail). Alterations of the hand bones may have

been caused by flexion of the thumb and fingers through activity. It is likely that this adult female had spent a lot of time working with her hands; perhaps with an awl or needle working with animal skins or textiles. The upper limb bones of subject 3 also demonstrate that she was probably right handed, although her left clavicle was more robust and strongly curved perhaps indicating some use of the left shoulder.

Subject 3 had progressed through other age groups, her femaleness changing, linked with age.

At the same time as she grew physically older and weaker, she had gained knowledge she had been through these ages and could pass on the skills, knowledge and resources to younger members of her group. She made contribution to her group over her lifetime.

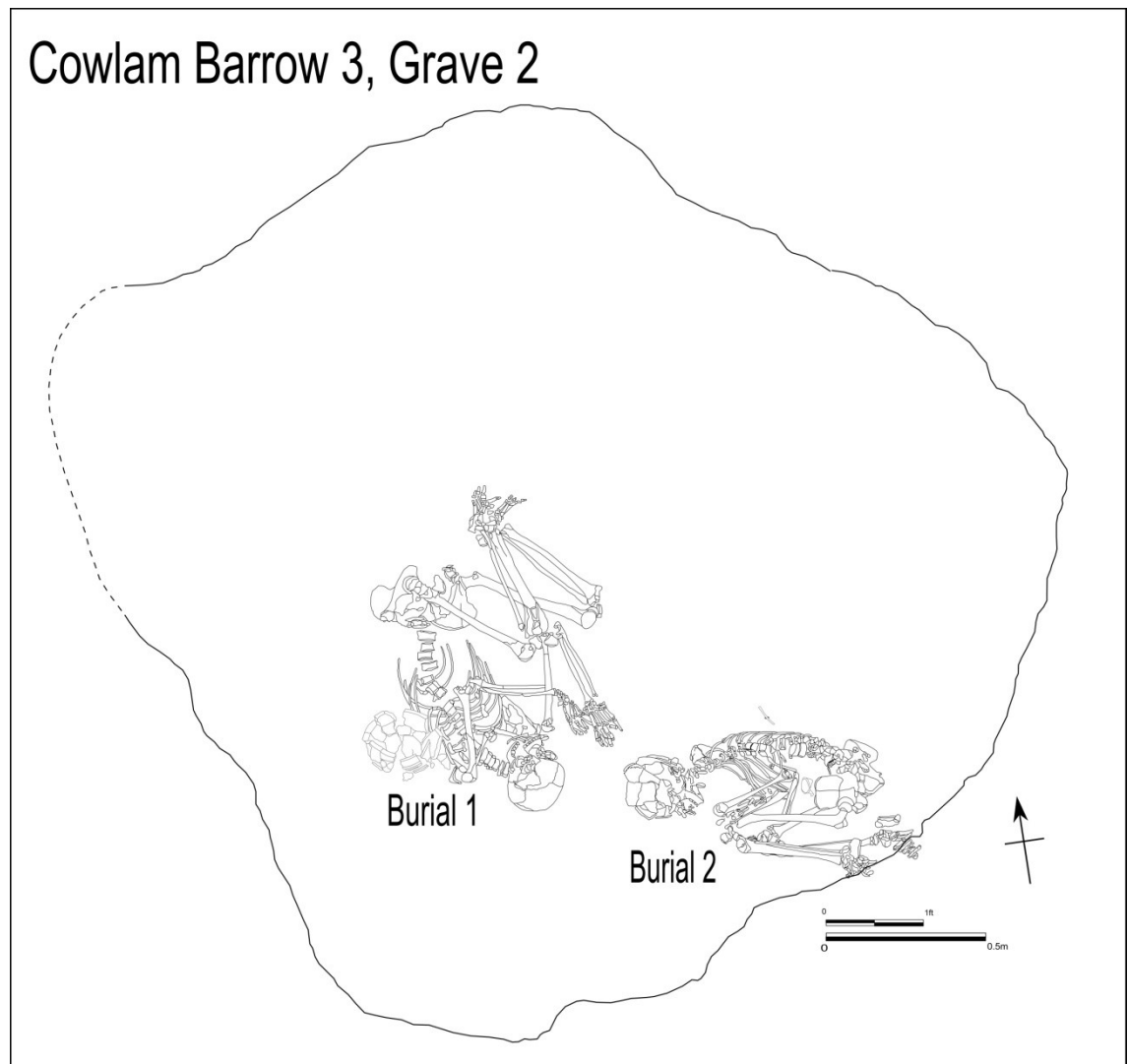


Figure 43: Plan of the burial pit at Cowlam barrow 3; burial 1 is on the left.

After death she was buried in a grave above an adolescent, and underneath this individual were four more individuals whose remains had become co-mingled. The adult female was the last to be buried in this grave. She was placed in a flexed position on her right side with her head to the south; her hands were 30cm from her face. A food vessel was placed behind her left shoulder. Even though it is likely that she would have used an awl or other pointed implement during life, there was no awl placed in her grave. Perhaps such implements which she had used were then used by her descendants.

Her social age can be seen through her body and all it has been through. When she died the mourners would have prepared her body for burial. No obvious food offerings (as would be seen from animal bones) were left with the body (in contrast to Folkton). Her skills may have connected her identity with others of her sex or of a certain age group; she also may have connected through her skills to the overall group. Skills lead to a product which would likely to have been seen or worn, and perhaps may have been seen by other groups.

Other individuals from the site included, two other adult females of around the same age, an adolescent, two infants, a male and a female both aged around 25-35, and another adult male. The other older females also had bone changes indicative of osteoarthritis. They had osteoarthritis to the acromial end on the scapulae possibly indicating some activity. Capasso et al. (1999, 57) discuss possible causes being elevation of the arms, the examples of activities they use are kayaking and harpoon throwing. While these exact activities seem unlikely, they give some idea of the kinds of movement required to lead to this deterioration.

Levels of identity for subject 3 can be discussed. The woman's status was not high as would be seen through objects but as an older female she had other achievements including skills she had learned over the years as well as achieving such an age. She would have been seen as an elder female; a survivor of injuries which could relate to a specific event which is remembered as a story, passed on to the younger generations. This solidifies only a single identity association with the group into their identity as a whole.



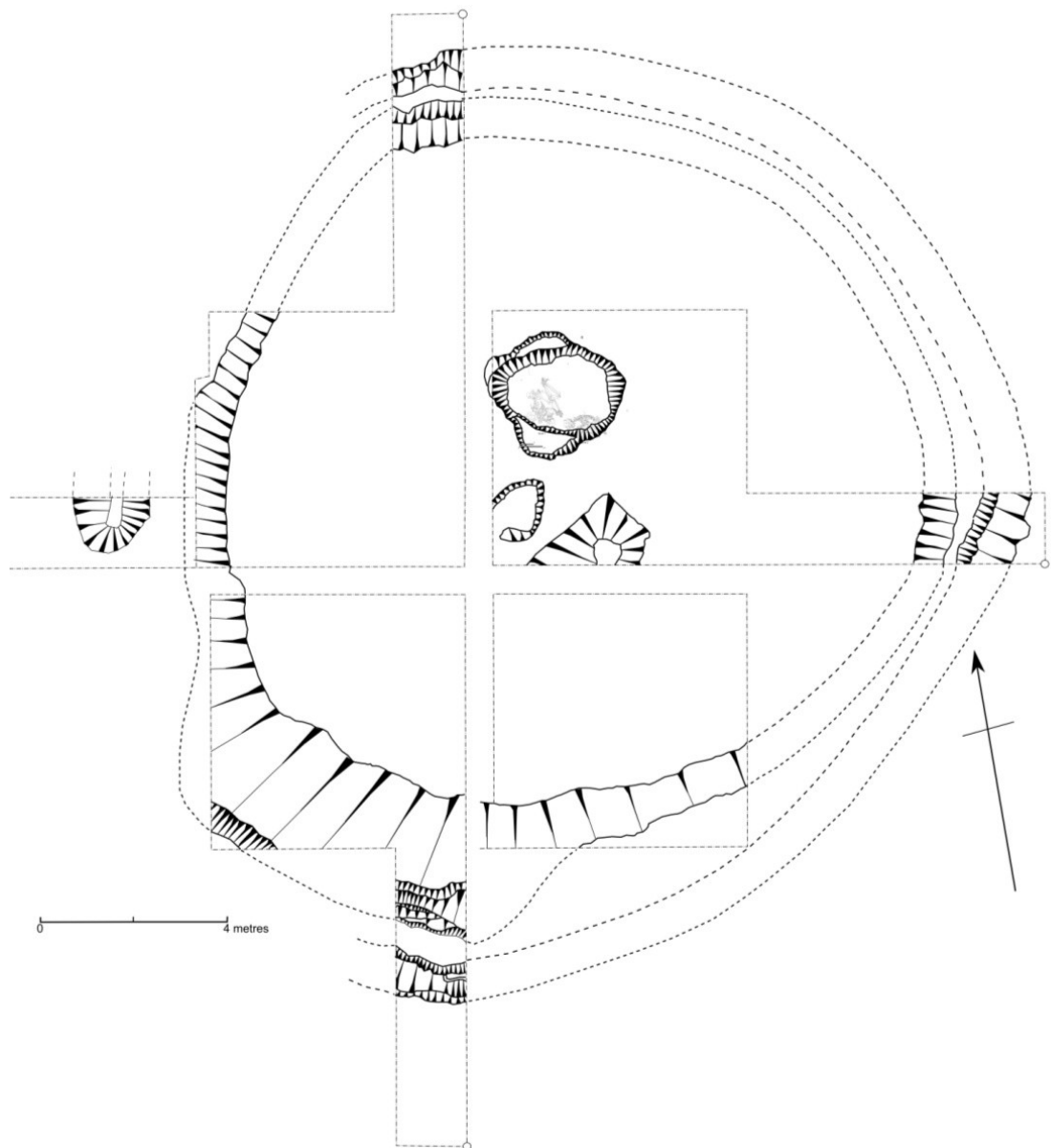


Figure 44: Plan of Cowlam barrow 3 (after Watts and Rahtz 1984).

Other affiliations can be seen in the other older females in the barrow while these older females may have been buried at a different time, associations may have been made between these individuals which led to them being buried in the same place.

## **Chapter 9: Health and trauma in the Early Bronze Age**

### *9.1 Introduction*

There has been little palaeopathological analysis of Bronze Age human remains within the UK, studies which exist are confined to specific site reports (Evans 1984) and individual case studies (Anderson 2002) with the exception of Roberts and Cox (2003) which is a review of literature.

Past assumptions about health in the Bronze Age have assumed an increase in stature and health due to increased farming and access to more carbohydrates (Roberts and Cox 2003, 77). However, Ortner and Theobald (2000) believe that health and nutrition declined from Mesolithic hunter gathering to agriculture. In game rich environments, hunters may obtain 10000 to 15000 kilocalories per hour, whereas subsistence cultivators average from 3000 to 5000 kilocalories per hour (Cohen 1989; Scott 2002, 6). The change from hunter gatherer to farming lifestyles led to a change from high quality to low quality foods. In Europe, agriculture is also seasonal which results in variation in the availability of certain foods through the year. Shortages may also occur due to temperature, pests and rainfall (Scott 2002, 6). Agriculture is also thought to be linked with increased evidence for joint disease and dental caries (Roberts and Cox 2003, 78).

In this section I will discuss the indications of disease or injury which are present on the human remains within this study and what these indications mean, both biologically and socially, for Early Bronze Age societies. Pathologies include: cribra orbitalia, linear enamel hypoplasia, dental caries, dental calculus, periodontal disease, infection and osteoarthritis (see appendix 16.4).

### *9.2 Indications of physiological stress*

As discussed in chapter 3, Indications of physiological stress have been interpreted as a way of accessing status. Here cribra orbitalia, LEH and stature are assessed and correlated with each other and other aspects such as age and sex.

### 9.2.1 *Cribra orbitalia*

Cribra orbitalia is a lesion which is located in the roof of the orbit due to marrow hypertrophy or subperiosteal bleeding or inflammation (Walker et al. 2009, 115). According to Aufderheide and Rodríguez-Martín (1998, 349) these lesions are found predominantly in infants and children. Cribra orbitalia has been thought to indicate iron deficiency anaemia, but this has been an area of vociferous debate in the palaeopathological literature. Cribra orbitalia may be caused by other malnutrition associated problems such as scurvy, or be caused secondarily by other diseases. Walker et al. (2009) argue that such lesions are more likely to be caused by vitamin B12 deficiency. Roberts and Cox (2003, 85) discuss 17 Bronze Age individuals with cribra orbitalia (5.8%) they interpret this rise from the Neolithic (2.3%) as an increase in intensification of agriculture, increased parasite load and general poor living conditions.

Within this study cribra orbitalia lesions are used as an indicator of general physiological stress rather than any specific condition. Cribra orbitalia lesions were found on both males and females and all age groups.

	Flixton, Folkton (NHM 179): an adolescent individual.
	Flixton, Folkton (NHM 180): a female aged 16-20.

	Moorhouse: an adult female aged 18-22 demonstrates an example of healing cribra orbitalia.
	Ganton (NHM 107): a juvenile aged 6-9 years.

Figure 45: Examples of cribra orbitalia from within the study

Out of the 155 inhumations within this study which it was possible to age and/or sex, 15 inhumations showed supra-orbital lesions typical of cribra orbitalia, no such lesions were seen in the cremated remains. This gives a prevalence of 9.67% within the inhumed remains.

Sex/age group	Number
Females	7
Males	5
Juveniles	2
Adolescents	1

Table 26: number of Females, Males and Juveniles and Adolescents with cribra orbitalia

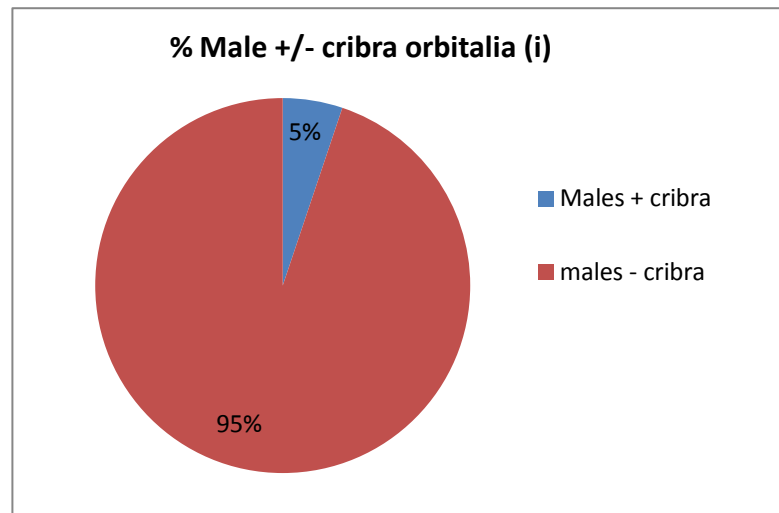


Figure 46: percentage of male adults with CO.

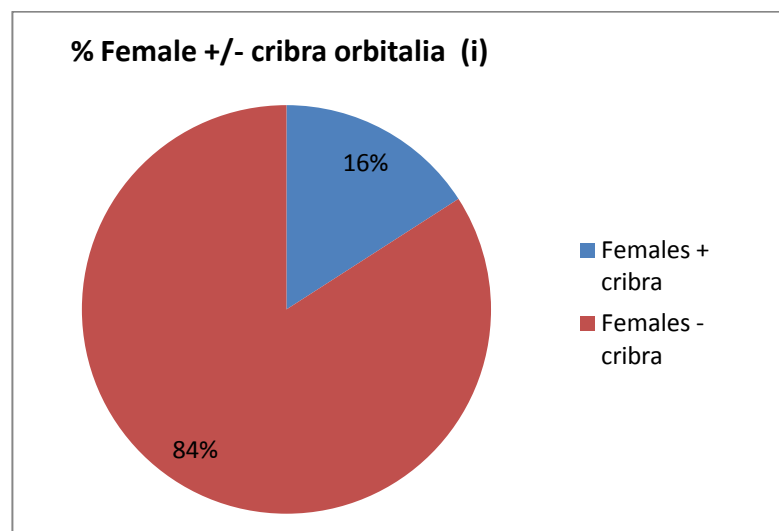


Figure 47: percentage of female adults with CO.

Sex	+ CO	- CO
Females	7	37
Males	5	92

Table 27: The number of adult males and females with and without CO.

When the individuals with cribra orbitalia are split by sex and age there is a higher prevalence in adult females (16%) than adult males (5%). The higher prevalence in female adults is probably due to the higher physiological strain on females due to menstruation and childbirth, although it is also possible that there may be a dietary or social aspect to this difference. As discussed earlier in chapter 8, although women may have been living longer, they also appear to have been under a higher amount of physiological stress for parts of their lives.

There are not enough children and adolescents with lesions for these percentages to be significant.

County	Number	%
Yorkshire	12	8%
Derbyshire	1	2%

Table 28: number and percentage of cribra orbitalia in Yorkshire and Derbyshire

There is a higher prevalence of cribra orbitalia in Yorkshire than Derbyshire; this may be due to the size of the samples or may indicate a difference in diet or health status in these two counties.

At first this might seem to indicate a better health status in the Derbyshire sample. However, as an individual has to be healthy in order to live long enough to for lesions to be formed this may indicate that health was not as good in Derbyshire as these individuals did not live long enough to develop lesions. Despite there being a greater percentage of cribra orbitalia lesions in the Yorkshire sample, it is possible that the Yorkshire individuals had better health (see Chapter 3 for discussion of hidden heterogeneity).

### 9.2.2 Linear Enamel Hypoplasia

Linear enamel hypoplasia (LEH) is a linear defect on the teeth which occurs when the development of the teeth is interrupted, and this kind of defect is among those described as indicators of physiological stress (Mays 1998).



Figure 47: An example of linear enamel hypoplasia on several teeth.

From 115 individuals with surviving dentition 38 individuals have LEH; this gives a prevalence of 33%. The adult females and males have an even prevalence of LEH; there

were not enough juveniles and adolescents to indicate any patterns with younger age groups.

Sex/age group	Number	%
Females + LEH	12	37%
Males + LEH	24	32%

Table 29: Percentage of males and females with Linear Enamel Hypoplasia.

There are four individuals with LEH across 10 or more teeth, these individuals were all adult males (Sherburn 105, Helperthorpe 125, Cowlam 146, Goodmanham 186). Sherburn 105 had two phases of LEH, the first occurred around two to three years of age and the second at around four to five. Helperthorpe 125 also had two phases of interruption to tooth growth, the first at 18 months to three years of age and the second at around 5 years. The LEH of Cowlam 146 occurred around the age of two to three years. Goodmanham 186 also had two phases of LEH which occurred at two years old and four to five years. The four male individuals discussed above do not have any other pathologies and do not stand out in terms of grave-goods. There were six individuals overall which had three episodes of LEH on one tooth these also did not have any correlation with grave goods.

When defects are matched over several teeth (as with Sherburn 105), these would have formed around the same time which indicates a systemic disturbance such as infection or high fever, whereas only one or two affected teeth indicates a local disturbance to that tooth (Hillson 2005).

Overall the average age for the tooth growth to be disturbed is age three for both males and females (Reid and Dean 2000). The most common age for males to have interruptions to the enamel is age two to three and a half years, for females the enamel growth is most commonly interrupted at ages two and four. Only one individual has both LEH and cribra orbitalia, this was the young female from Folkton 71 (NHM 180); so the two kinds of lesions do not seem to have any correlation.

County	Number	%
Yorkshire	36	37%
Derbyshire	2	12%

Table 30: the number and percentage of individuals with LEH in each county

There is a higher prevalence of linear enamel hypoplasia in Yorkshire; again this could either be due to the smaller sample for Derbyshire or a difference in health status in these areas.

### 9.2.3 Stature

There were only 23 individuals out of 196 inhumations where the long bones were complete enough for stature estimation (see chapter 7 for method). There were six females where stature estimation was possible, these had an average height of 5'3 or 156.4 cm. The minimum height was from two females at around 5'0 – 5'1, these were Cowlam 143 and 150. The tallest female measured at 5'5 – 5'7 or 162.5 cm, this individual was also from Cowlam (BM holdings). The other 16 individuals were male, these had an average height of 5'8 or 170.3cm. The male statures ranged from 5'4 or 160 cm (Cowlam 146) to 6'1 or 183cm (Hindlow 1). This individual seems to be an outlier within this data set; the next tallest male was Goodmanham 194 who was around 176cm or 5'10- 6'0 in height (see appendix 16.2.2).

<b>Females</b>	Height (ft)	Height (cm)
<b>Average</b>	5'3	156.41
<b>Minimum</b>	5'0	150
<b>Maximum</b>	5'7	165

Table 31: Stature of adult females

<b>Males</b>	Height (ft)	Height (cm)
<b>Average</b>	5'7	166.3
<b>Minimum</b>	5'4	160
<b>Maximum</b>	6.1	183

Table 32: Stature of adult males

Roberts and Cox (2003, 86) discuss the average stature range for males being from 167 to 177cm, with a mean of 172cm from 61 individuals. The female range was from 154 to 161cm with a mean of 161cm from 20 individuals. The study sample has a lower minimum height.

Brothwell (1961) gives an average Bronze Age male height of 5'85 (78 individuals) and 5'75 for Yorkshire males (35 individuals). The stature of two adult individuals from



Deeping St Nicolas measured at 174cm/5'8 for a male and the female was around 157cm/5'1 (French 1994, 73).

The stature of the Amesbury Archer and Boscombe Bowmen ranged from 5'8 to 5'10 (1.74-1.78cm), this fits within the range of the individuals within this study (Fitzpatrick 2011, 19). An adult male from a ditch at Stonehenge was 5'10 which also fits into the range, although this is a beaker individual (Evans 1984).

#### *9.2.4 Do indications of physiological stress indicate low status?*

Linear enamel hypoplasia does not seem to correlate with stature; females with LEH range in height from 5'2 – 5'7, females without LEH range from 5'0 – 5'6. The males with LEH ranged from 5'4 – 5'9; males without LEH range from 5'6 – 6'1. So although some of the males without LEH have reached a higher stature there are those without LEH who have not reached as much height.

This seems to indicate that while stature could be an indication of health status, LEH occurs across all different heights in males and females so in a group is not indicative of low status during childhood.

Linear enamel hypoplasia does not correlate with cribra orbitalia or the occurrence of grave-goods. Whilst cribra orbitalia is more common in females, LEH is relatively evenly distributed between males and females. There is no apparent correlation between stature and cribra orbitalia, but the individuals with lesions of cribra orbitalia do not have surviving post-crania to confirm this any further (except one Folkton individual). Cribra orbitalia is found in all age groups but there is a larger concentration in young adults with 7 of the 15 individuals with cribra orbitalia being aged between 16-25.

None of the indicators of physiological stress seem to correlate with grave-goods, as discussed in chapter 8 these are most likely connected to age and sex.

### *9.3 Dental diseases*

#### *9.3.1 Periodontal disease*

Periodontitis (or gum disease) is caused by bacteria in dental plaque and causes inflammation of the tissues which surround the teeth (Waldron 2009, 239). The bacterial process also results in the destruction of the alveolar bone (tooth sockets) this leads to areas of extra soft tissue between the teeth and the bone which

eventually results in tooth loss (Ogden 2007, 292). Periodontal disease is indicated on the skeleton by the recession of the alveolar margins which surround the teeth (Waldron 2009, 240).

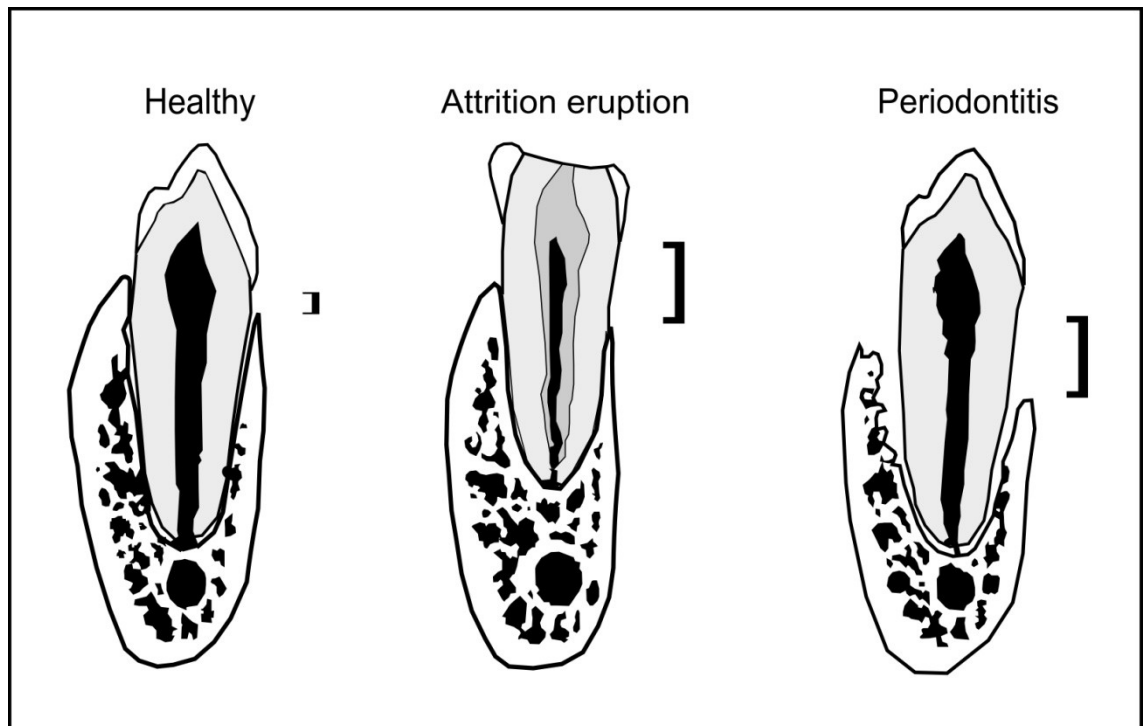


Figure 49: Cross-sectional diagrams demonstrating the differences between healthy tooth and alveoli, attrition eruption, and periodontal disease (after Ogden 2007).

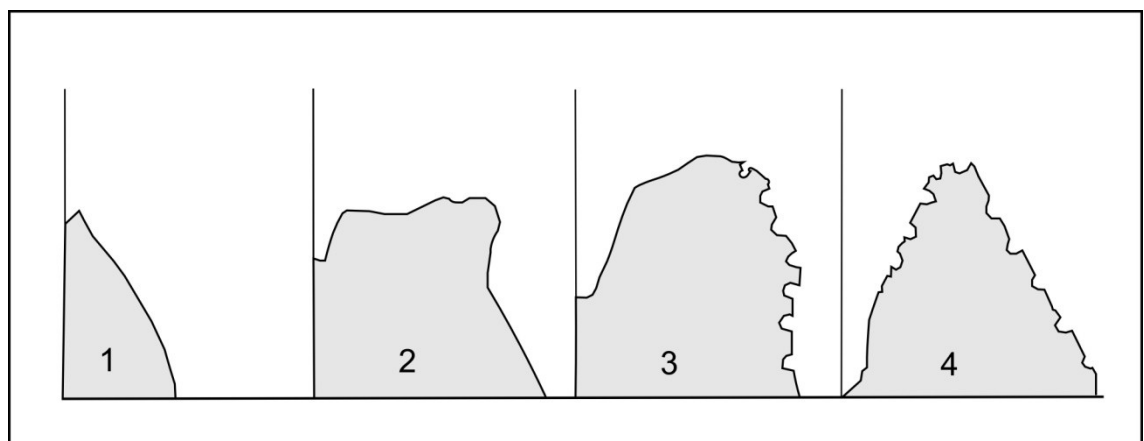


Figure 50: Diagram of the stages of periodontal disease (after Ogden 2007). Stage 1: little or no PD, stage 2: mild-moderate PD, stage 3: moderate-severe PD, stage 4 severe PD.

Overall there were 42 individuals with periodontal disease out of 115, which gives a prevalence of 36.5%. This percentage seems quite high but only three older

individuals (Cowlam 151, Folkton 181 and Weaverthorpe 130) suffered from severe periodontal disease which gives a prevalence of 2.6%, the other individuals only suffered mild to moderate periodontal disease.

From the 115 individuals with surviving dentition, 21% of young adults had periodontal disease, this then decreases with 16% of adults aged 30-40 with periodontal and then there is an increase (as would be expected) to 41% of adults age 40-50+ with periodontal disease.

Sex	Number	%
Female	9	28%
Males	33	45%

Table 33: the number and percentage of females and males with periodontal disease.

A larger percentage of male adults at 45% had periodontal disease compared to 28% of females. Of the young adults with periodontal disease the majority are males, this may indicate some kind of dietary status for men, especially younger males. A difference in diet which would cause periodontal disease would most likely be to do with meat consumption. Ogden (2007, 294) discusses the likelihood that inflammatory lesions are independent of age and more a reflection of each individuals health and susceptibility. Delgado-Darias et al. (2006, 667) conducted a study of calculus and periodontal disease in a prehispanic population in Gran Canaria; they also found a higher rate of periodontal disease in men (72.4%) than women (62.7%). They interpret this as lower consumption of protein in women (Delgado-Darias et al. 2006, 670). The greater prevalence of periodontal disease in males could be due to differences in diet or differences in hygiene practices.

### 9.3.2 Carious lesions

Dental caries occur when the tooth enamel, dentine and cement are destroyed by the acid production from bacteria in dental plaque (Hillson 1996, 269). The most common bacteria which live on teeth are *streptococci* and *lactobilli*, these bacteria metabolise fermentable carbohydrates to produce acid which eventually causes demineralisation of the tooth (Waldron 2009, 237).

Corbett and Moore (1976) found that the molars were most commonly affected by caries, the most common place for caries to start were along the cemento-enamel junction (where the crown and root join) this has been linked with periodontal disease which causes the exposure of the tooth roots.

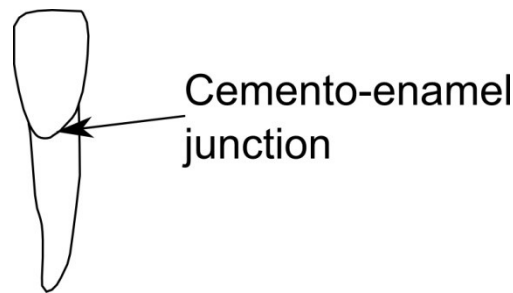



Figure 51: diagram of the CEJ

Cereal agriculture has been linked to a rise in dental caries from the Neolithic onwards (Hillson 1996, 283). Roberts and Cox (2003, 82) found caries in 39 of 179 adults in the literature, but their data presumes that all the individuals within their sample had dentition.

Within this study 11 out of 115 individuals had carious lesions; this gives a prevalence of 9.5%. Of the male individuals with surviving dentition, 7% had caries, whilst 6% of females had caries. Comparison of regional prevalence of caries indicates a slightly higher percentage of caries in Yorkshire.

County	Number	%
Yorkshire	10	10%
Derbyshire	1	6%

Table 34: the number and percentage of individuals with carious lesions in each area

	<p>An adult male aged 35-40 from Flixton, Folkton (NHM 175) has an occlusal and interdental carious lesion.</p>
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	<p>Sherburn wold (NHM 99) an adult female has an early carious lesion to the right mandibular third molar</p>
	<p>Ganton (NHM 109) an adult female aged 40-55+ has a carious lesion (arrowed) on the CEJ of a molar, as well as an abscess on the adjoining alveoli; periodontal disease can also be seen in the ragged, troughed alveoli and the exposed tooth roots.</p>

Figure 52: Examples of carious lesions in the study.

### 9.3.3 Ante-mortem tooth loss



The loss of teeth during life is also another dental pathology which is linked to and caused by periodontal disease. There were 25 individuals with ante-mortem tooth loss out of 115 individuals; this gives a prevalence of 21.7%. Roberts and Cox (2003) discuss a prevalence of 14% of individuals with ante-mortem loss within their literature review.

	<p>At Ganton (NHM 114) a male aged 45 to 55 has ante-mortem tooth loss to the mandible. (1) had healed some time prior to death.</p>
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	(2) is more recent to this individuals death this can be seen where the bone is still porous.
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Figure 53: An example of ante-mortem tooth loss

There were three almost completely edentulous (tooth-less) mandibles; one mature adult female aged 45-55 from Cowlam; one old adult female from Rudston and other mature female from Weaverthorpe. Only one mandible was entirely edentulous.

	<p>An older adult female at Langton Wold (95) had a completely edentulous mandible, this individual had lost all her mandibular teeth long enough before death that the alveoli (tooth sockets) had completely healed and resorbed.</p>
	<p>An adult female of middle to old age from Weaverthorpe (130) had a mandible which would have been almost edentulous with severe periodontal disease. A few teeth may have been remaining at death, but would have been held on mostly by skin and ligaments.</p>



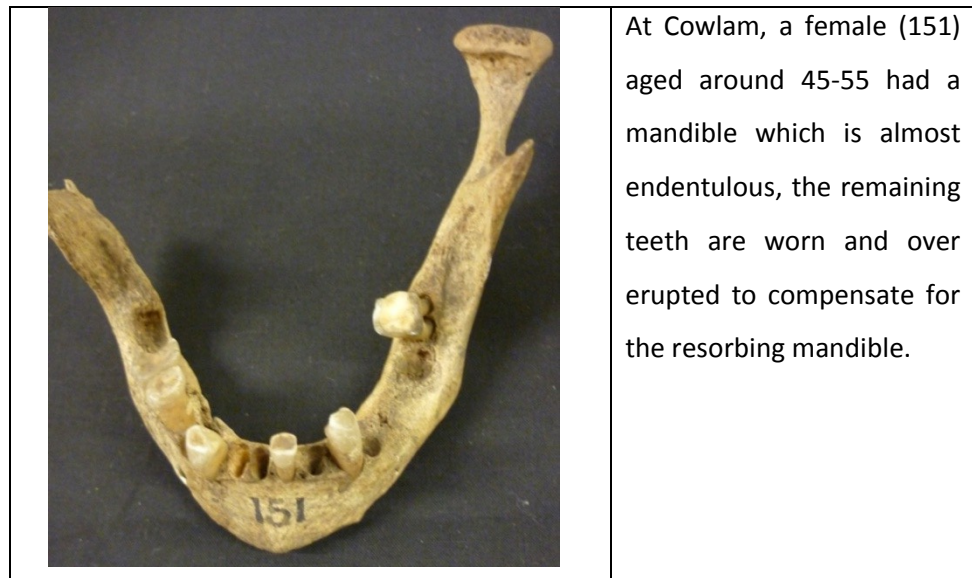


Figure 54: Examples of endentulous or near endentulous mandibles.

An older male from Ashfell has two areas of ante-mortem loss and resorption to his mandible, the maxilla of this individual also has ante-mortem loss and also a severe calculus deposit on the right upper molars. This deposit has probably developed due to the lack of corresponding lower molars.

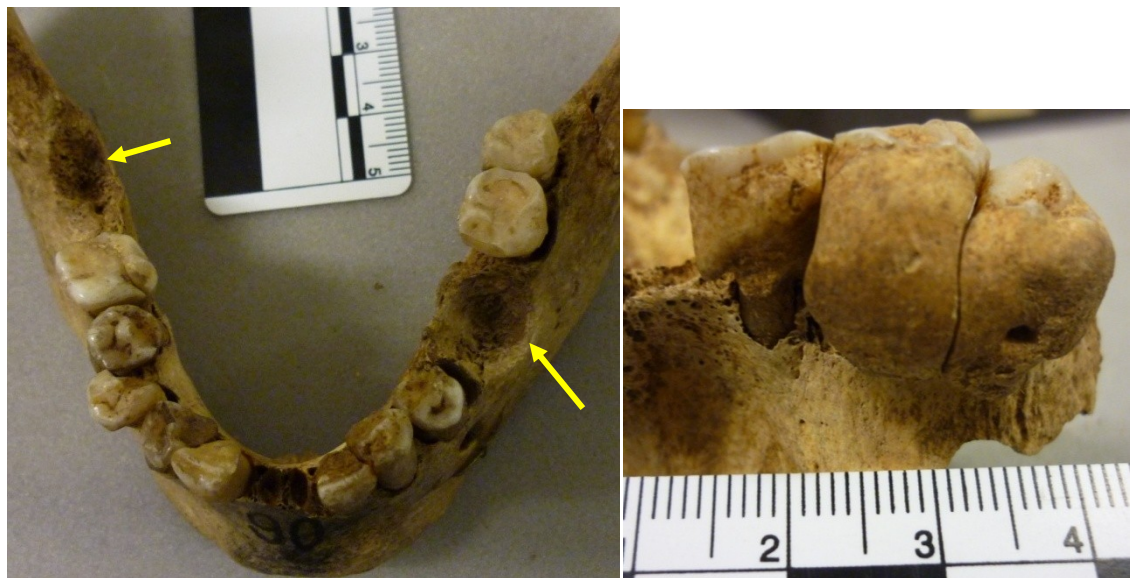


Figure 55: (a) the mandible of an adult male from Ashfell with ante-mortem loss and resorption (arrowed); (b) a severe calculus deposit on the maxillary molars of the male from Ashfell.

Ante-mortem loss was evenly distributed through male and female individuals, almost all the individuals with ante-mortem loss were aged at 40-50+ which indicates that ante-mortem loss increases with age, as would be expected.

Regionally Yorkshire has a greater prevalence of ante-mortem loss than Derbyshire.

County	Number	%
Derbyshire	2	12%
Yorkshire	20	21%

Table 35: regional prevalences of ante-mortem tooth loss

#### 9.3.4 *Peri-apical voids*

A peri-apical void (a space around the tip of the tooth-root) is caused by a granuloma or an abscess; a peri-apical granuloma is a soft tissue lesion which forms after the death of the tooth pulp, this creates a space in the bone around the tooth root (Ogden 2007, 297).

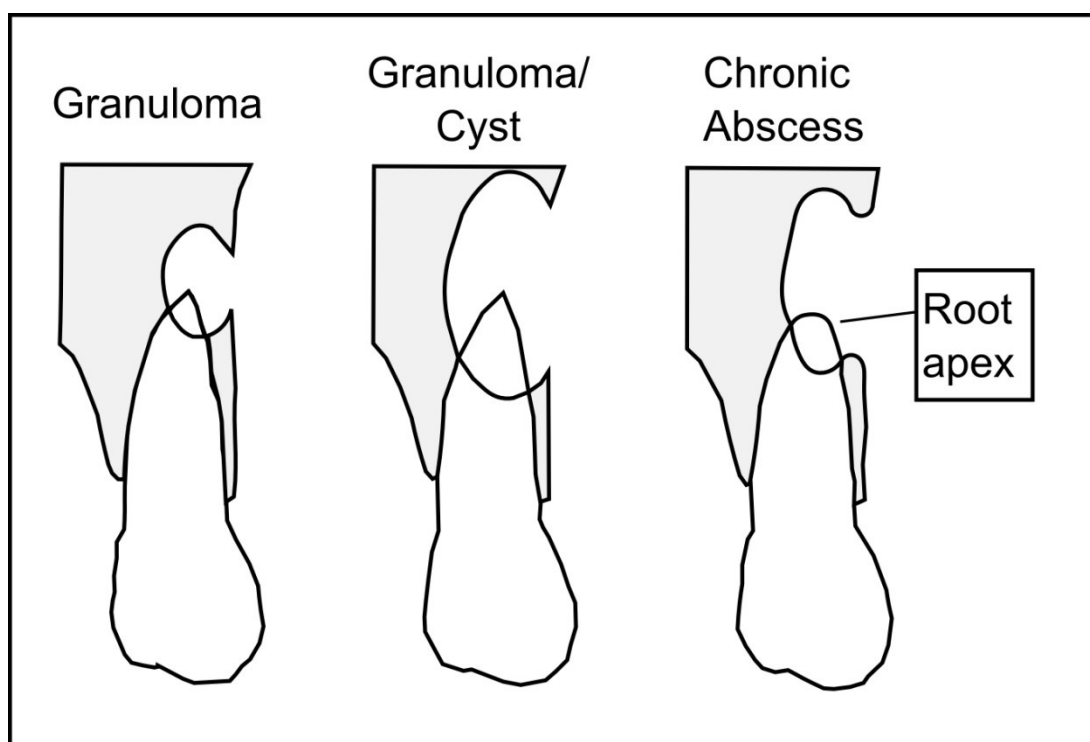


Figure 56: Diagram demonstrating the difference between granuloma and abscess (after Ogden 2007).

Seven out of 115 individuals had peri-apical voids indicative of granulomata which gives a prevalence of 6.08%. Regionally Yorkshire and Derbyshire have the same prevalence. All of the individuals with these lesions were adult males, all six individuals from Yorkshire were aged at 40 and above, the one example from Derbyshire was a young adult around 20-25.



### 9.3.5 Dental abscess

The majority of dental abscesses develop from peri-apical granuloma with the accumulation of pus. This usually drains through the bone of the mandible or maxilla resulting in a fistula (Hillson 1996, 287). Abscesses are differentiated from granulomata by their smooth, rounded margins.

Overall there were 10 out of 115 individuals with an abscess; this gives a prevalence of 8.69%.

Roberts and Cox's (2003) review gives a prevalence of 34 of 189 individuals with abscess which, at 17.9 % of the individuals in their study is a much higher prevalence. Regionally Derbyshire has a higher prevalence of abscesses than Yorkshire.

County	Number	%
Yorkshire	6	6%
Derbyshire	2	12%

Table 36: regional prevalences of dental abscess

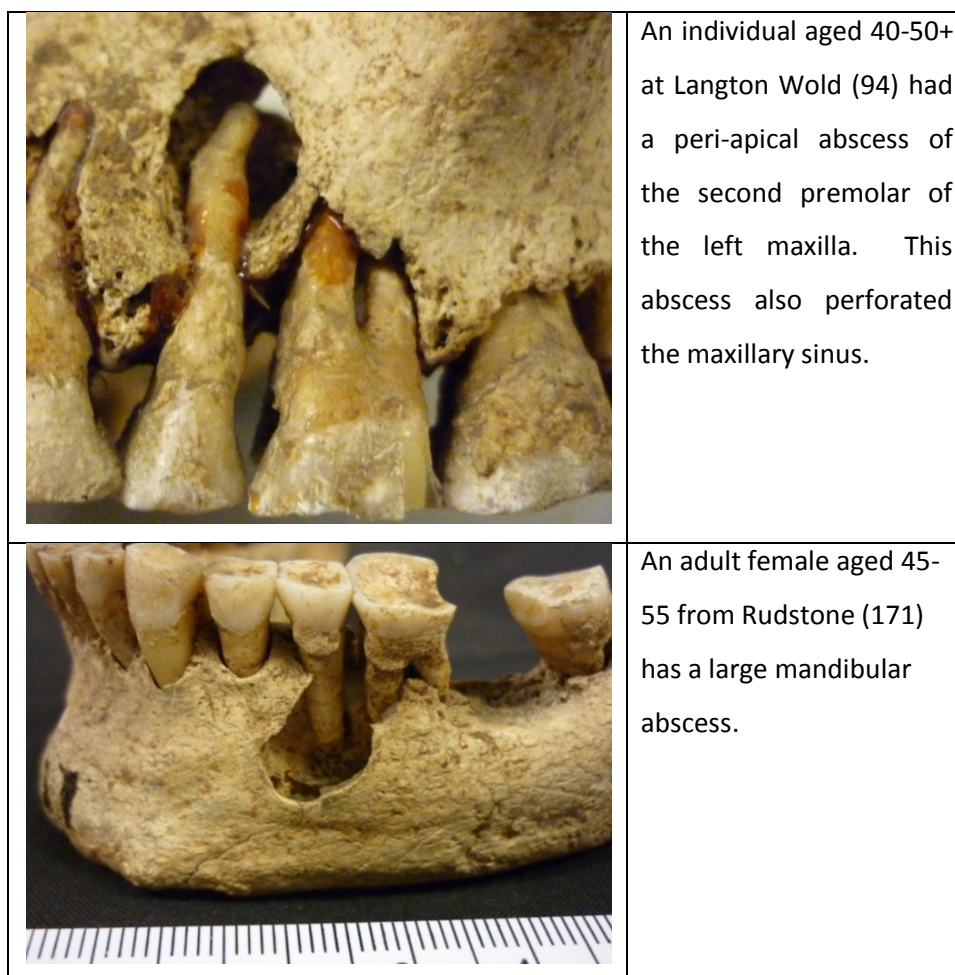


Figure 57: examples of peri-apical abscess

#### 9.3.6. *Dental disease in the Early Bronze Age*

The dentition of Early Bronze Age people provides a great deal of information on the health and lives of these individuals. The dental evidence from the inhumation sample indicates that young male individuals were more likely to have periodontal disease which may be due to a gendered diet differentiation. Despite this there was an even distribution of caries in both males and females.

LEH has a higher prevalence in the Yorkshire inhumation sample which, if we consider the osteological paradox, is an indication of survival, and may indicate a greater health or dietary status in this area, as these individuals have survived whatever health issues caused these interruptions in dental development (see 3.4.1).

#### 9.4 *Infection*

Within this study there is no evidence for specific infectious lesions. There is no definite evidence for specific infection within the British Bronze Age generally; the earliest evidence for tuberculosis for example is in the Iron Age (Mays and Taylor 2003). Evidence for most diseases with specific lesions is found from the Iron Age and the Roman period onwards, proximity to livestock being one cause of cross-species diseases such as tuberculosis and brucellosis (Mays 2007, 107; Taylor et al. 2007).

Periostitis is the only possible indication of infection within the studied remains. This is at times an indication of non-specific infection, it is caused by an inflammation of the periosteum which surrounds the bone. The periosteum responds to pathological stimuli by forming new bone; other causes of periostitic new bone formation include: trauma, haemorrhage and tumours (Waldron 2009, 114). Periostitic bone may be fibrous (active) or compact (healed).

Hindlow burial 1 represents the only clear case of periostitis throughout the whole study. On the right temporal bone of the cranium there is a plaque of fibrous, active new bone which is above and behind the root of the zygomatic process, above where the ear would have been. There are also multiple layers of healed periostitic bone. There is also a plaque on the right side of both the internal and external mandible. On the internal surface the periostitic bone is around the mylohyoid foramen and groove, posterior to the mylohyoid foramen is another groove which may be an area of

drainage from an infection. Some of this periostitic bone is smooth and compact but most of it is fibrous. These areas of fibrous bone may be a sign of infection which had been ongoing on the right temporal and mandible for some time prior to death.

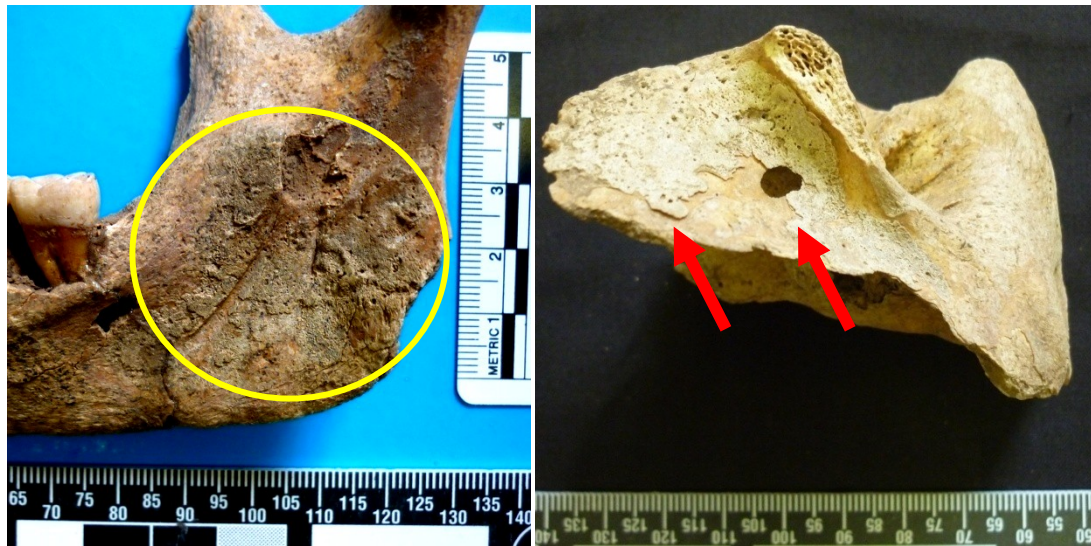


Figure 58: Internal surface of right mandible and the right temporal, both with periostitic bone shown in circle and by arrows.

The temporal also has a possible lesion through the bone, in the centre of the periostitic activity. The edges of the opening appear old, the bone is very thin and if held up to the light the bone surrounding the opening is transparent. Overall the evidence for periostitis is small and not indicative of any patterns.



Figure 59: Close up of possible lesion, seen from the internal surface of the temporal bone.

While evidence for infection in the Bronze Age seems rare, there are cases in the literature. Brothwell (1961) discusses an individual from the Mortimer (1905) collection. This individual had received a wound to the wrist which had led to infection and extra bone formation with considerable alteration in the appearance of the wrist. Four of the metacarpals had fused to the carpals and all formed a bony mass which was also fused to the radius. Although there was some evidence of healing, there

were also indications of areas of infection which would have been present for some time before death (Brothwell 1961, 322).

### *9.5 Disorders of the joints*

The joints of the skeletal system deteriorate over the lifecourse due to various factors including: genetics, activities and trauma. These pathologies are reflected in either increased bone formation or bone destruction which affects the health and flexibility of the joints.

#### *9.5.1 Schmorl's nodes*

Schmorl's nodes are vertebral lesions caused by prolapsed inter-vertebral discs, bone forms to prevent further intrusion of disc material and results in a lesion on either the superior or inferior surface of the vertebral body (Faccia and Williams 2008, 29).

Whilst Schmorl's nodes have been thought to be caused by bearing heavy loads, other possible causes include developmental problems and other conditions. Kyere et al. (2012) also found that while some Schmorl's nodes in modern people cause pain, many are asymptomatic.

Roberts and Cox's (2003) study resulted in a Schmorl's node prevalence of 16.2%. Within this study, eight out of the 22 inhumed individuals who had enough post-cranial skeleton to make assessment of the spine had Schmorl's nodes, this gives a prevalence of 36%. Also out of 60 cremation deposits which had surviving vertebrae, three had Schmorl's nodes this gives a prevalence of 5% for the cremated remains. There were not enough individuals with spinal bones to indicate any patterns either regionally or by sex distribution.



Figure 60: An example of a Schmorl's node on the inferior surface of a lumbar vertebra

### 9.5.2 Osteoarthritis

Osteo-arthritis is a degenerative condition of the joints which leads to four changes to the joint surfaces: porosity (multiple, irregular sharp edged holes), eburnation (an area of polished appearance), osteophytes (extra bone growth) and sclerosis (Jurmain 1999). The latter is only visible on X-rays therefore not of use in this study. Osteoarthritis can be primary or secondary; for example badly healed bone fractures may cause secondary osteoarthritis.

From a total of 42 individuals within this study which had complete enough skeletons, 15 had bone changes indicative of osteo-arthritis. A greater percentage of males had osteo-arthritic change (38%) than females. The joints which were most affected overall were the cervical and lumbar vertebrae, followed by the proximal ulna and distal femur.

Unfortunately the sample of complete skeletons is too small to correlate patterns of osteoarthritis with age and sex groups, although this could still be interesting for the interpretation of lifestyles.



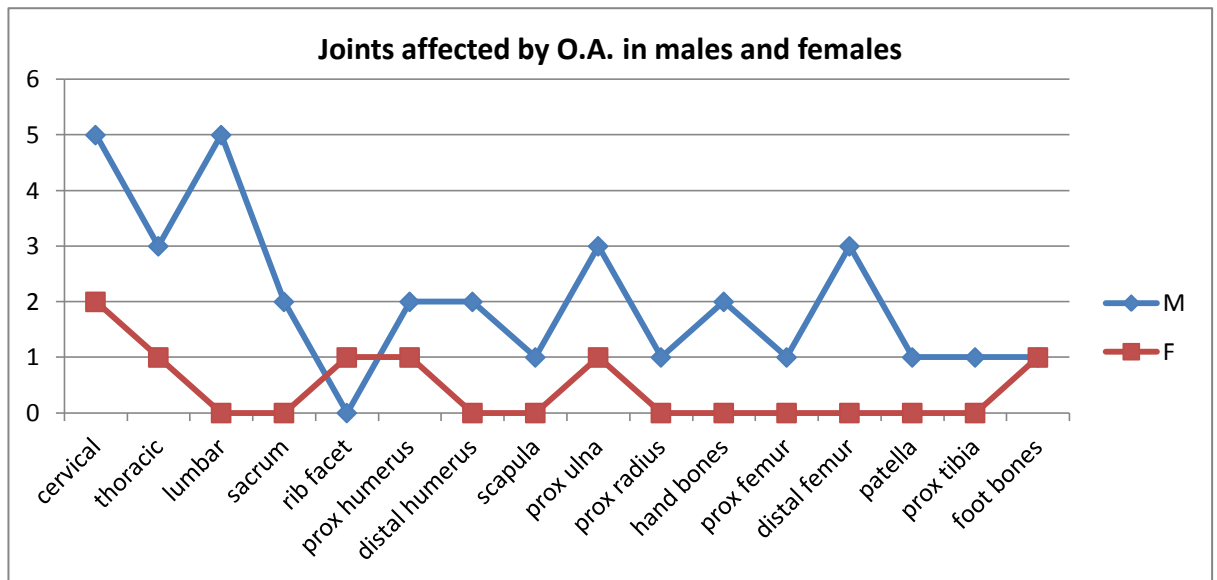


Figure 61: Number of male and female individuals with osteo-arthritic changes to joints.

	<p>An example of florid expansion and macro-porosity of the transverse articular facets on a cervical vertebra from Cowlam</p>
	<p>An example of eburnation (arrowed) on an articular facet of a second cervical vertebrae from Hindlow burial 3.</p>

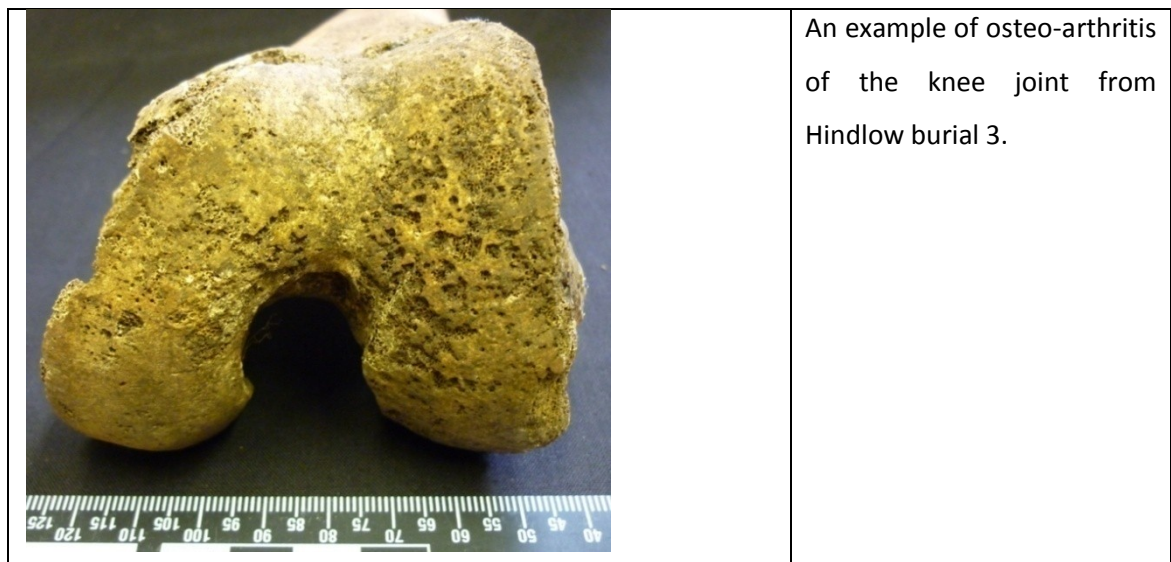


Figure 62: Examples of joint alterations which can be seen in osteoarthritis.

## 9.6 Trauma

Trauma, whether through accident or interpersonal violence, has been investigated in both the Neolithic and the Iron Age (Schulting and Wysocki 2005; Smith and Brickley 2009; Redfern 2010). Previous studies on Bronze Age skeletal material have been more limited but include: Mays and Cox (2003) and Anderson (2002).

### 9.6.1 Cranial trauma

There were only three cases of cranial trauma out of the 190 crania complete enough for assessment; this results in a prevalence of 1.5%.

A male individual (see osteobiography 2) aged around 40-50 years from Langton Wold barrow has cranial trauma to the right parietal bone, this can be seen from the smooth edges of the defect and patination of the feature. There also appears to have been some healing to the area as the edges are slightly smooth rather than sharp. It seems likely that this wound was due to interpersonal violence.

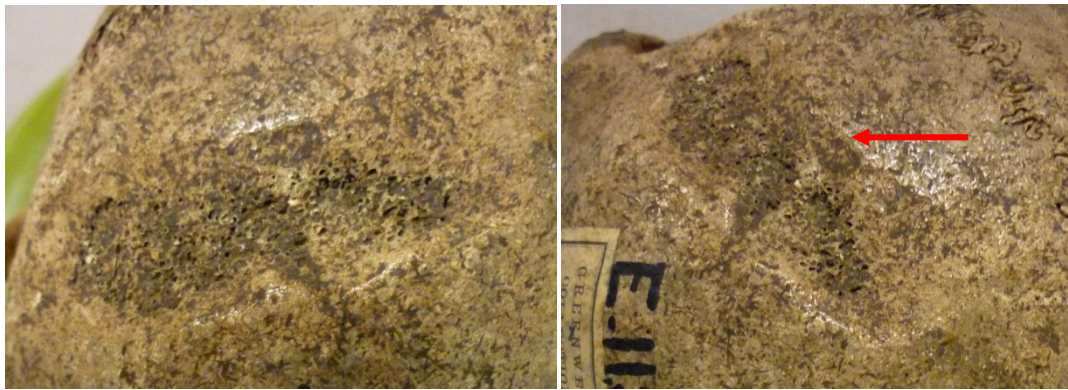


Figure 63: possible traumatic lesion to the cranium on an individual from Langton Wold.

A female individual from Cowlam barrow 3 (see osteobiography 3) aged around 40-50 has healed cranial trauma to the top of the cranium on the sagittal suture; this is in the middle of the top of the skull. The lesion is quite rounded and is about 1.2cm in diameter. There are only slight signs of pathological changes on the inner surface of the cranium. This injury may be have been caused by accident or violence.



Figure 64a: (right) superior view of healed blunt force trauma at Cowlam; 41b (left) close up view.

Megdale skull A, and older adult male also has probable blunt force trauma to the left parietal bone, with fractures radiating outwards from a lid of bone.





Figure 65: Megdale cranium A, with probable blunt force trauma.

A young female individual (see osteobiography 1) aged 16-20 from Folkton has possible cut-marks on the frontal and left parietal bones.



Figure 66a: anterior view of the cranium; 66b: possible cutmarks on the left frontal and parietal.

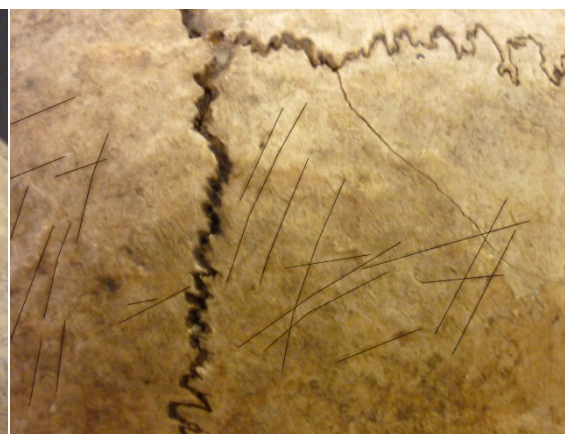
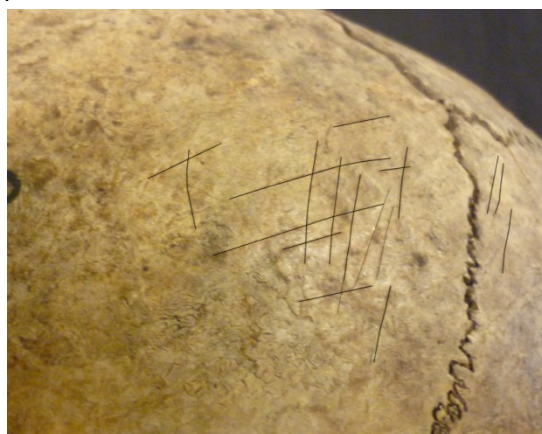


Figure 67a and b: highlighted close up views of the possible cutmarks from Folkton individual 180.

### 9.6.2 Post-cranial trauma

There were three cases of post-cranial trauma, out of 42 individuals with complete skeletons, this gives a prevalence of 7.1%. Greenwell and Rolleston (1877) also discuss Ganton 118 having healed fractures of the left and right femurs. This individual is in the study but the post-cranial skeleton did not survive.

Burial 1 from Liff's Low, Derbyshire, an adult male, has a healed fracture to the distal end of the left humerus, there is new bone formation and enlargement of the medial condyle and the area above the trochlear is misshapen (Glencross and Stuart-Macadam 2000; 2001). The distal epiphysis seems to be displaced medially (towards the centre of the body). There is also a mass of remodelled bone, which would probably have reduced the level of possible flexion for this arm. This along with the expansion and lipping of the proximal articular surface of the ulna and radial head indicates secondary osteoarthritis. The secondary O.A. may indicate that the injury was present for some time prior to death.



Figure 68: The humeri from Liff's Low burial 1, the left humerus (arrowed) and right humerus which is normal.

From X-radiological analysis (see figure 69) there is no visible fracture, however, there are visible areas of extra cortical bone outside of the original cortex. This extra bone has been present for a long enough time that it has started to reduce from remodelling. The extra bone is on both the lateral and medial sides. There is also an extra bone spur where a muscle attachment has ossified. A possible differential diagnosis would be trauma to the epiphysis during adolescence, before the completion



of fusion which would displace the epiphysis medially. This would have led to fusion of the epiphysis whilst mal-aligned, the extra bone would have grown to compensate. The mobility of this arm would have been reduced in comparison to the right arm. This was also demonstrated in the gracility of the left arm compared to the right which had more developed muscle attachments.



Figure 69: X-radiograph of the distal left humerus, the red lines mark where the cortex was before the extra bone formed.

The adult female with blunt force cranial trauma from Cowlam also has possible spinal fractures, as well as fusion of the second and third cervical vertebrae. The fractures and fusion of the vertebrae may both have been caused by trauma at different times.

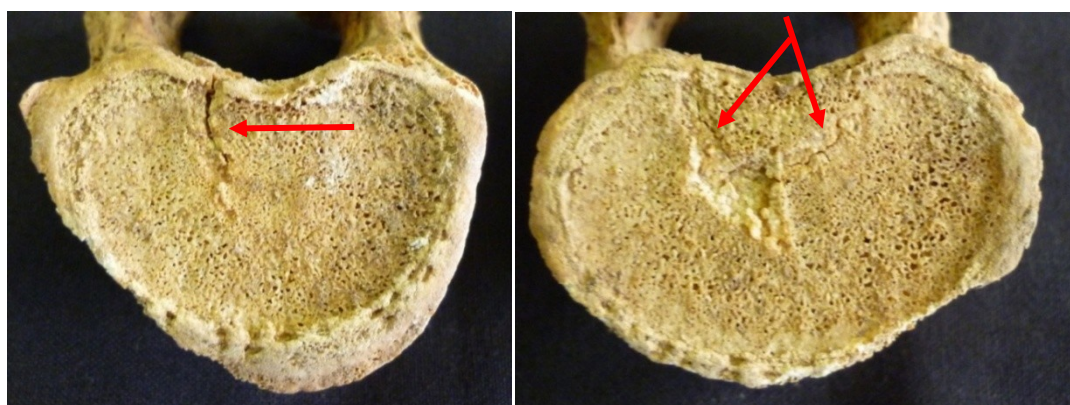


Figure 70: Possible spinal fractures from adult female Cowlam burial

Overall in the study, there is little evidence for trauma; this may partly be due to the small amount of surviving post-cranial material within the sample. Cranial trauma certainly is less common in the Early Bronze Age when compared to the Neolithic.

However the evidence there is for trauma in the sample indicates both possible violence as well as accidental trauma.

### 9.7 Activity and movement

A female individual from Cowlam barrow 3 also has extra bone formation (extoses) on the proximal ulna and the bones of the hands. It has previously been thought that this person had a 'rheumatoid condition' (Watts and Rahtz 1984) but the individual does not have any erosive changes consistent with any spondyloarthropathy (Inoue et al. 2005). The alterations to the hand bones may be activity related, possible activities include phalanx flexor hypertrophy. This is caused by flexion of the digits whilst holding a tool in a firm grasp (Capasso et al. 1999, 81). Another possibility is the flexion of the digits with forceful opposition of the thumb and index finger (Capasso et al. 1999, 82) for example by driving bone needles through tough skins. However the extoses are not limited only to the index finger, this likely indicates long term flexion of the hands during an activity.



Three complete distal phalanges and one partial of Cowlam burial 1 (barrow 3) an adult female. All the phalanges have extra-bone (exostoses). The distal half of the partial phalanx appears to have been lost during life.

	<p>Four intermediate phalanges from the same individual with exostoses around the distal ends which articulate to the proximal phalanges (above) and also along the edges (circled)</p>
	<p>The left ulna from the same individual has exostoses on the olecranon (arrowed)</p>

Figure 71: extoses on bones of an older female adult from Cowlam

Other common MSM findings in the sample include robust attachments on ulnae for brachialis, and robusticity of the ends of the clavicles. These are likely to indicate load bearing of both arms and use of the pectoral girdle in shoulder movement.

### 9.8 Conclusions

The health of Early Bronze Age populations has rarely been discussed within the literature. This chapter has demonstrated that palaeopathological evidence not only adds to our general knowledge of past lifestyles but also on an individual basis can reveal different episodes of ill-health whether in childhood or through adulthood.

Overall within the study, there is a higher prevalence of cribra orbitalia in females which may indicate a higher physical strain through menstruation and child bearing. While there is only an overall prevalence of 9.67% within the sample, there are twice as many females with cribra orbitalia than men. This means that women were more likely to suffer from physiological stress or malnutrition.

By contrast, linear enamel hypoplasia has an even distribution in both males and females and, occurred, on average between two to four years of age. The distribution of linear enamel hypoplasia demonstrates that such disturbances to growth and development occurred across a large proportion of children (33% in this study). This seems to negate any connection with these defects and status and is more likely to be indicative of a common childhood infection which affected both males and females.

Periodontal disease was more prevalent in males than females, there were no sex differences in carious lesions of ante-mortem loss but both increased with age as would be expected. The difference in periodontal disease may indicate differences in diet between males and females and also perhaps in different age groups. This would require further research through the analysis of stable nitrogen and carbon isotopes.

Indications of physiological stress do not correlate with each other or with status as seen from grave-goods. As discussed above there are at least two different health patterns to be seen; in childhood, males and females were equally likely to have suffered a period of ill-health which caused disruption to growth and development. However, in adulthood the differences in cribra orbitalia prevalence may relate to a gendered identity rather than status. Other health patterns do not appear to be related to status at all.

There is very little trauma in the study and there seems to be much less evidence of such injuries compared with the Neolithic (Schulting and Wysocki 2005). The Neolithic evidence has a much greater prevalence of both blunt force and projectile trauma. The Early Bronze Age evidence points towards violence being much rarer. These results go against the traditional views of increased violence at the beginning of the Bronze Age, which were all tied in very neatly with presumptions of changes in society and ideology which corresponded with ideas of elites.

Scott (2002, 57) discusses how women are more likely to survive famine than men due to higher body fat levels, lower energy consumption as well as the concurrent decline in fertility which may be caused by malnutrition. More generally for both males and females, a lack of nutrition also increases the chances of infectious disease and an increase in deaths in vulnerable groups (Scott 2002, 49).

There are not enough post-cranial remains in the inhumation sample to come to any definite conclusions on patterns of osteo-arthritis and Musculoskeletal Stress Markers however, the small sample demonstrates possible differences between males and females, which may have been caused by activities. This would require further osteological research on a larger sample with surviving post-cranial skeletons.

The examples of endentulism demonstrate not only that people were surviving to older age ranges, they were also still provided for or still making a contribution as valuable members of communities.

The osteological evidence of health and disease ties in with the differences in male and female lifespans as in some cases they are suffering different health complaints, or at least these health problems are manifesting in different ways. The results of this evidence provide a link between gender and age identities. These results also connect with the demographic patterns discussed in chapter 8. Gender identities are strongly inter-connected with age identities; males and females have different age-processes linked to their genders which develop over time. This can be seen through the evidence of health which relates to general identities which fluctuate and alter through the lifecourse as a process of change.

***Osteobiography 4: Rudstone 63, burial 10***

Subject 4 was an older adult male aged around 45 and above, he was around 5'9-5'10 (173 cm) in height. Like subject 2, he also seems to have suffered no interruptions to his childhood development.

He lived a relatively long life, reaching old adult age. During his life he developed osteoarthritis to the distal femoral condyles (knee joints) which is likely to have been caused by weight bearing during movement (Capasso et al. 1999, 132). This man also had moderate periodontal disease which is to be expected for his age.

He was prepared for burial and then laid on his right side with his right hand placed under his head and his left hand up to the right upper arm. He was buried in a central grave-pit between two willow planks which may have been a symbol of containment; also around the body was charcoal, some burning would have occurred around the time of his burial. A food vessel was placed in front of his face and a barbed and tanged arrow was between the pot and his face. It is possible that the shaft of the arrow was held in his left hand. The arrow may have been a symbol of his occupation or aspect of identity such as hunting.

Other individuals who were buried at this barrow included an older adult female and two older adult males, as well as two adult females aged in the 30s. Apart from subject 4 only one of the mid-adult females was associated with an object, a bone pin was behind this woman's head. The rest of these individuals were not associated with any objects. The latter mid-adult female was buried in the centre of a smaller chalk mound in the barrow with the legs twisted to face the opposite way to the upper body.



## **Chapter 10: Burial patterns in Bronze Age northern England**

### *10.1 Introduction*

This section draws on the discussions from chapters 4, 5 and 7.14 in order to investigate how events and stages seen through archaeological evidence make up burial and barrow processes. The evidence associated with the human remains in the study is examined through the processes set out in chapters 4 and 5. The histories of burials are seen from the preparation of the body through all the processes at both individual and regional scales. These processes and events may then be related to individual and group identities. As seen in Chapter 5, burials go through multiple stages even if they are only 'simple' inhumations.

### *10.2 Events prior to burial*

As discussed in chapter 5, the process of burial may be complex with multiple stages whether the individual is inhumed or cremated. This is most visible in the survival of preserved plant material, animal skins and other organic contents which may indicate something of the preparation of the body and burial area.

#### *10.2.1 Wrapping or enclosure of the body*

Most evidence for the wrapping or enclosure of the body is that of wooden coffins, planks and surrounds. There are 11 examples of inhumations within wooden wrapping within the study out of 151 burials which were possible to assess for grave furniture, this gives a percentage of 7.28%. Preservation and the quality of excavation will have affected this. Of these examples eight were males, one was female and two were not possible to sex or age (See appendix 16.2). There is also a possible case at Church Lawton North, Cheshire although there were no human remains preserved. The majority of these examples are from the Goodmanham barrows. There were no examples within the cremation sample, although these do exist in the literature, for example at Heslerton, Yorkshire (Powlesland 1986). There is also possible evidence for leather burial goods at Heslerton Wold, where an adult male aged 24-30 buried in the central grave of Heslerton barrow 4, was associated with possible leather remains. He also had a food vessel placed in front of his face.



Figure 72: Photo of the Gristhorpe coffin (courtesy of Dr Nigel Melton).

### 10.2.2 *Adornment and artefact treatment*

At Loose Howe, Yorkshire there is evidence of leather remains and a shoe; this is the only evidence within the study for clothing, however there is evidence for other adornments.

<b>Adornment</b>	<b>Male</b>	<b>Position</b>	<b>Female</b>	<b>Position</b>
Bone pin	3	Chest, crown	3	Back of head, behind hips, front of face
Buttons	2	Neck, chest	0	
Beads	1	?	2	Waist (bagged), arm & hips
Bronze ring	2	?	0	
Pendant	1	?	0	

Table 37: the number of inhumed males and females with specific adornments and their positions in relation to the body.

Beads which are associated with burials seem to be found only in small groups, or at times just one is found per individual. This supports Woodward's (2002) discussion of certain kinds of beads as heirlooms or relics, but may also indicate that single beads were deposited with the deceased as gifts (Brück 2004). Only if we can see where and how the beads are found in relation to the body can we suggest whether they were worn by the deceased.

From the positions in which they are found, bone pins may have been used to fasten hair, clothes or burial wrappings. A bone pin found near the face is likely to imply use

for fastening of a shroud as at Cowlam barrow 57 where a bone pin was found at the face of an older adult female.

Adornment	Male	Female	NP
Bone pin	1	2	3
Beads	0	1	2
Clay studs	0	2	1

Table 38: the number of cremated individuals with specific adornments

Artefacts which are associated with cremation deposits sometimes show signs of fire damage from the pyre. There were 10 cremation deposits which contained animal bones; most of these had also been in the cremation pyre except for the fish vertebrae from two of the Whitelow cremations.

There were 24 cremation deposits which were associated with lithics, of these 10 lithics showed signs of burning.

All five examples of bone pins found associated with cremated bones within the study had been cremated. The axe hammer associated with Church Lawton North cremation F20 also showed signs of heat alteration. Metal objects show this evidence less often however a Bronze awl at Hindlow had been included in the pyre.

Ear-studs were found at Whitelow, Lancashire and Woodhouse End, Cheshire; these were associated with women and showed no signs of fire damage.

The inclusion of artefacts in the pyre may relate to the deliberate destruction or breaking of objects as a metaphor of death. At Woodhouse End pottery seems to have been thrown into the ditch with the purpose of breaking it. A flint knife which was deposited with Whitelow cremation C had been purposefully broken.

### 10.2.3 *Cremation pyre*

It is said to be rare to find pyre deposits within round barrows/cairns (McKinley 1997). The method of collecting the cremated remains for deposition is difficult to know without knowledge of how the remains have been processed prior to analysis. The remains from Brackenber cairn were associated with large amounts of charcoal which would indicate scooping of the remains rather than picking them out, this in turn would indicate that the remains were probably cremated on site or nearby (see

appendix 16.3 and case study 11.5). Cremated remains within large amounts of ashy material would also be indicative of being scooped from the pyre.

#### 10.2.4 *Fleshed or de-fleshed?*

The practice of excarnation or defleshing has often been discussed in relation to Neolithic human remains (Smith and Brickley 2004). This practice has also been discussed in the Early Bronze Age, for example by Gibson (2007). However, such interpretations have usually been assumed from survival of different bone elements. Here the evidence for defleshing within this study will be discussed.

As discussed in chapter 5, certain fracture patterns to cremated bone might indicate dry or fleshed cremation. Of the cremations in this study, out of 79 cremation deposits which were assessed for fracture patterns the majority had both transverse and linear fracture patterns. Only four deposits had the significant warping associated with definite fleshed skeletons. These were two deposits at Church Lawton, as well as Gallowsclough and Cowlam cremation 3. Thirty three deposits showed curved fractures and 25 had spiral fractures, these fracture types are also likely to indicate the cremation of a fleshed person. The majority of the deposits have four or five different fracture types in any combination.

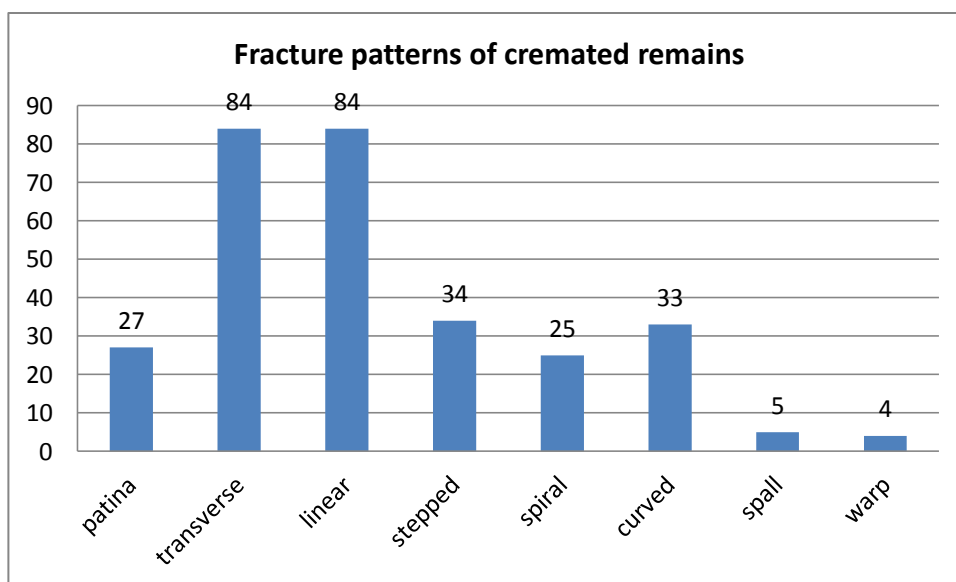


Figure 73: Number of deposits with fracture types

The manipulation of inhumations prior to burial would be indicated by cut marks, disturbance, re-positioning and missing bones (particularly large bones). Within the

study there were only two examples of cut marks, one on the posterior distal end of a femur from Megdale, Derbyshire and another possible example on a skull from Folkton barrow 71, Yorkshire (see chapter 9).



Figure 74: Photo of cutmarks on the posterior-distal aspect of a distal femur from Megdale.

While a number of burials have evidence for disturbance, this seems more likely to have been caused by re-excavation for further burials.

Overall there is little definite evidence for the practice of defleshing within the study. The majority of the cremation deposits have similar fracture patterns and colour, ruling out much difference in cremation practice. One exception is a cremation deposit from Hindlow, this has enough variation in colour to be different. However, this could be due to bad weather conditions during the cremation process which dampened the pyre and made it inefficient (see case study for further details).

### 10.3 *During the burial rite*

The next main events in the burial process are usually to do with the positioning and deposition of the body. These are different depending on how the remains have been treated.

#### 10.3.1 *Arrangement of the body*

Examples from outside the study area with good preservation (see Chapter 5) hint at the possibility of elaborate arrangement of the body prior to the burial rite; with evidence for plant remains, wooden containers and animal skins. Within the study this sort of evidence is more limited; the known examples follow.

Green Howe burial 8 (an adolescent) was found lying on 'carbonised' remains, which were presumably the remains of some plant material which was used to lay the body on (Wood 1972). Evidence of wooden coffins is more common; a burial at Loose Howe was contained within a wooden coffin and also was accompanied with a wooden canoe. The burial of an older adult male at Cowlam barrow 59 was deposited within a wooden surround, this was not lidded. Another older male burial at Rudstone barrow 63 was placed between two willow planks. A number of burials in Goodmanham barrows were also placed in wood lined graves; this was also the case at Londesborough (Greenwell and Rolleston 1877).

Bodies were not just surrounded using short term degradable materials; stones and chalk were also used. At Willerby Wold barrow 34 a young adult male was buried in the centre of the barrow on a 'flooring' of chalk flags. At Folkton barrow 71 an adolescent individual was covered with chalk slabs. A young adult female in the same barrow was buried within a surround of flat pieces of chalk (Greenwell and Rolleston 1877, 275). These materials may have been used to create a sense of permanence through the symbolism of the materials and their colours. Such materials may also be linked to identities, for instance wrapping within wooden 'boat-like' coffins (as at Church Lawton North) may relate to an identity of distance, travel or water.

#### 10.3.2 *Cremation deposition*

The majority of cremation deposits were within pits (including those which are also in pots). There were 58 deposits in pits out of a total 95 which it was possible to assess.

There were 37 deposits within urns, out of which 30 were possible to assess contextually. Of these it was only possible to assess the position of the urn in 21 cases. Sixteen were placed in an inverted position; three others were in an upright position and two were found on the side and may have moved.

There are only four examples which from organic remains or the pit/deposit formation, are thought to have been deposited in leather bags: at Gallowsclough and Church Lawton North in Cheshire, and Moseley Height, Lancashire (see appendix 16.3.2).

There are only four examples of scattered deposits: at Whitelow, Shuttleworth (Lancashire) and Hindlow (Derbyshire). There were three cremation deposits in a cist (Moseley Height) and one under a cist (Shuttleworth), while at Woodhouse End the cremations were deposited in the ditch.

Of the cremation deposits which weighed 1500-2000 three were single cremations and two were multiple cremations. One deposit weighing at 2955g was a double cremation of two adults (Cowlam). Of the deposits weighing 1000-1500g nine were single cremations, the rest were multiple. The majority of the smaller deposits were of one individual.

Of the cremation deposits 27% weigh less than 100g, some of these may be token deposits but some result from plough damage, for example some of the shallower Church Lawton North deposits have been reduced in this way (see appendix 16.3).

McKinley (1993) has estimated an average weight of 1625g for the cremated remains of one individual; overall 20% of the cremated deposits within the study weigh at over 1000g. The largest weights come from Church Lawton North, Gallowsclough, Cowlam, Whitelow, and Holmrook.



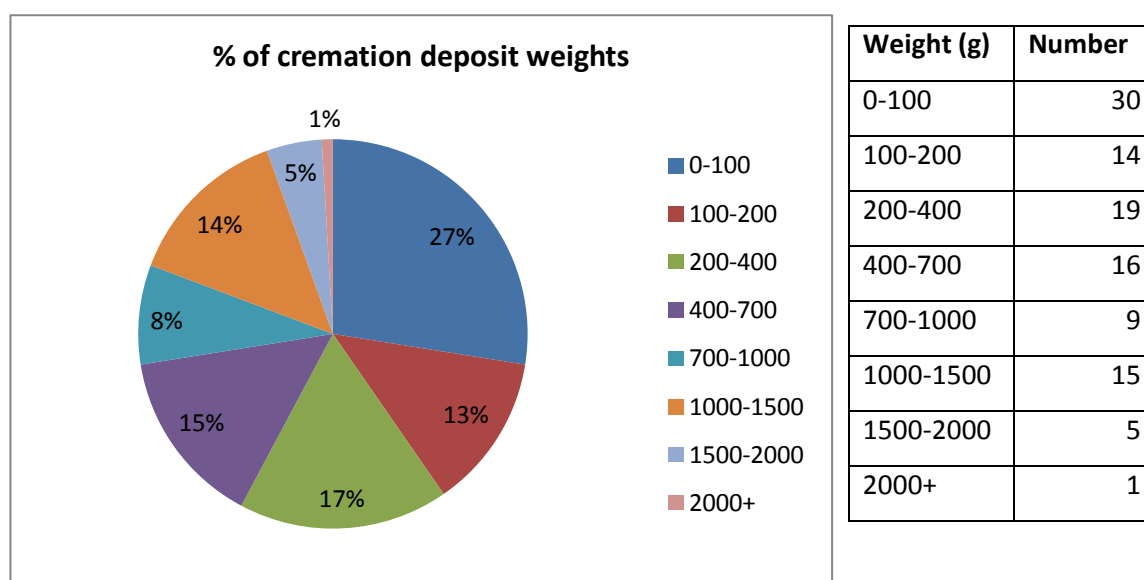


Figure 75: Percentage of cremation deposits in different weight ranges. Table 39: The number of cremation deposits in different weight ranges.

### 10.3.3 Patterns of burial positions

Correlations of burial side and sex have been discussed in the literature (Tuckwell 1975; Thomas 1991; Jones 2008) although this has not been a popular theory for UK burials; there are examples of Bronze Age cemeteries in Europe where the burial side and sex correlate strongly (Sofaer Deverenski 1997).

The most common burial position of inhumations is on the side, in a flexed position. There were only two individuals which were positioned extended and supine: Hindlow 2 and Goodmanham 118; Burial 2 at Hindlow had spinal pathology and the latter was in a wood lined grave.

Analysis of the remains in this study where the side is known, from a total of 91 individuals, shows that both males and females are buried on either the left or right. However, the males show a higher number laid on the left and the females are almost evenly distributed between left and right (see appendix 16.2.4).

Side	Number	%
Male - left	37	65
Male - right	20	35

Table 40: The number and percentage of males - burial side



Side	Number	%
Female - right	18	53
Female - left	16	47

Table 41: The number and percentage of females – burial side

Thomas (1991) discusses opposing directions of male and female burials, males are thought to have had heads to the east and females to the south in Yorkshire, the remains in this study show no such pattern; there is no correlation with sex and direction of the head, not even within specific sites.

Mortimer (1905) discusses the direction of the head related to the position of the body. Mortimer's collection had a larger number of individuals on their right side compared to Greenwell's which showed a preference for the left (see appendix 16.10). Mortimer only re-excavated one of those sites which Greenwell had excavated.

Tuckwell's (1975) study of burial side and direction demonstrated a strong directional orientation for beaker burials (see previous discussion in chapter 5). While Tuckwell used a large sample of 636 burials there are only small numbers of individuals with food vessels correlated with sex and side in her sample. While this is an interesting approach, it cannot be applied to all areas and burials as it is not proven that it works in a generalised way. If this approach was to be useful within this study it should be from the site scale outwards. Tuckwell's categorisation of double burial patterns is more interesting, some of these patterns would require dating to be certain of contemporaneity.

Within this study, when the inhumation sample is categorised into adults of known sex and side with those associated with beakers and food vessels only a small number of individuals have all aspects of this information.

At Goodmanham 111, there are three adult females all on the left side, with the heads positioned to the north-east. The other Goodmanham sites within the study are not in agreement. Of the seven burials in the sample from Cowlam 57, the male and female burials are both positioned on the right or left. Generally where there are a couple of burials in a site with male/female opposite positioning (such as at Weaverthorpe 43) there are other burials within the barrow or cemetery which are conflicting. A much

larger number of inhumations with known positioning and artefact associations would be required to investigate potential patterns any further.

Shepherd (2012) assesses the evidence for patterns in the arrangement of beaker inhumations in north east Scotland and east Yorkshire. The Yorkshire sample from Shepherd's study encompassed 62 inhumations. She found that the majority of males were laid on the left facing east and the majority of females were laid on the right side, facing west. However there were only small numbers of sexed individuals within her study (seven females facing west out of 11; 9 males facing east out of 16) those which do not fit in this pattern are thought to be later (Shepherd 2012, 261). Only two of the individuals from East Yorkshire within this study correspond to those in Shepherd (2012), although the majority of remains within the study with pottery are associated with food vessels, however there does not appear to be a pattern even when removing beaker associated burials.

The position of the hands within this study varies greatly, the majority are near the face (80 of 96 individuals had one or both hands positioned to the face or head) other positions are at the chest, behind the head, down the sides, extended out from the body (see appendix 16.2).

The majority of the burials from the Greenwell collection do not have specific enough details of where they were placed in the barrows. Greenwell's descriptions are at times unfortunately vague.

#### 10.3.4 *Position within the site*

In the past it has been assumed that central burial position within a round barrow or cairn indicated high status (see chapter 2). Within the study, where contextual information is available, there were eight adult females buried at the centre of barrows and twenty adult males. These were the first burials if they were within pits which were re-used. Four of these individuals paired into double burials, one of two males and one a male and female. All five of the adult males from Goodmanham within the centre were from barrows which only had one or two individuals, although this might be due to the limitations of Greenwell's excavations (Greenwell and Rolleston 1877).

Sex	Number	Age
Females	8	2 YA, 6 M-OA
Males	20	6 YA, 5 MA, 9 40+

Table 42: the number of males and females buried in central positions.

Central burials are not always associated with any grave-goods and these are often only food vessels or flint flakes. Burials which are later in the sequence or not central often have other artefacts.

However, does burial in the centre of the barrow mean they were the first buried there? This was not the case at Hindlow, Derbyshire (see case study 11.1).

While antiquarians believed that central burials were primary in sequence and thus of highest status, their focus on excavating the centre of round barrows makes this a circular argument. It is likely that past assumptions of central burial position as an indication of status had been gathered from analogy with status and position within church cemeteries where high status individuals were placed closer to the church. At round barrows and cairns however there is usually no such central structure to be associated with.

#### 10.3.5 *Single or multiple burials*

Out of 134 burials which were possible to assess contextually there were 33 individuals which were part of double or multiple burials (see below for discussion). This leaves 101 'single burials'. Perhaps the burials should not be so simply categorised as single or multiple. Some Yorkshire round barrows have large pits which receive a series of sequential burials, such as at Green Howe and may have been viewed as a single sequentially extended burial.

Within the inhumation sample there were 10 adults buried in association with children; only one of these adults was a woman (Willerby Wold) the rest were adult males. It is possible that this is an indication that there was a preference for children to be buried with adult males; however, further investigation of child burials is discussed in chapter 13.

Of 109 cremation deposits, 19 were multiple; the majority of these multiple deposits are from Cumbria. For example, at Aglionby five out of the eight cremation deposits

were multiple, and one of three at Greystoke. Further south, five of the 19 deposits at Church Lawton North were also multiple.

In most cases 'multiple' cremation deposits are made up of 1 adult and 1 child, almost all of the Cumbria examples (except Brackenber) follow this pattern; the children's ages range from infant to around 10-11 years. At Church Lawton North some of these deposits contained adults and children, but some contained adults with adolescents. In Cumbria adolescents tend to be in single cremation deposits, as for example the two deposits of adolescents at Broomrigg (see appendix 16.3).

It seems possible that in Cumbria it was appropriate or part of burial rites to bury a child with an accompanying adult; contrastingly, adolescents were seen as more adult-like in their burials.

At Church Lawton North, two of the multiple deposits were of an adult and an adolescent – people at Church Lawton may not have viewed adolescents to be as much like an adult as in Cumbria.

In Lancashire one of the cremation deposits at Moseley Height was made up of one adult, one older child and one infant. The cremation deposit from Noon Hill was of two individuals; an adolescent and a young child. At Whitelow, also in Lancashire all the deposits were of one individual, this included children, adolescents and adults.

#### 10.3.6 *'Interaction' with other bodies*

Double burials can be seen at Hindlow (burials 3 and 4) these two individuals were positioned with their heads in opposite directions and the bodies partly over laying each other. At Sherburn barrow 9 an older adult male and a young adult female were buried together in the central grave, both individuals were laid on their right side (Greenwell and Rolleston 1877, 148). At Ganton barrow 21 two young adult males were buried so that the head of one was at the feet of the other (Greenwell and Rolleston 1877, 163). At Willerby Wold barrow 34 there was an older female adult whose burial was associated with the remains of three children. These included an adolescent, an older child and a younger child; the adult female was facing the young child whose right hand was up to the face of the adult. The child was also positioned between the knees and face of the adult (Greenwell and Rolleston 1877, 183). At Cowlam barrow 57 a young adult female was associated with the burial of an older

adult male. The head of the female was close to the hands and knees of the male, either not all of her had been deposited or her body had been disturbed as her skeleton was not complete (Greenwell and Rolleston 1877, 215). Also at Cowlam 57 the skull of an older adult female was laid on the thighs of a middle aged adult male, there were no surviving post-cranial bones from the body of the female.

At Hindlow burials 1, 2 and 8 were associated with the remains of juveniles. At Folkton barrow 70, an adult male in his 30s was associated with the remains of a child. Also at this barrow the remains of an adolescent were associated with some cremated bones. A similar occurrence can be seen at Goodmanham barrow 120 where the remains of an older adult male were also associated with cremated remains.

#### *10.3.7 Disturbed burials: manipulation or multi-stage burial?*

Several individuals in Cowlam barrow 57 showed signs of disturbance. These included a female over 45 years of age who was only represented by a skull (mandible included) this skull (as mentioned above) was placed on the femora (thigh bones) of an adult male of middle age who also only had one femur and pelvic bone remaining (Greenwell and Rolleston 1877, 219). The female individual was also entirely endentulous. Also at Cowlam 57 a young adult male in his early 20s has been disturbed which was seen in the missing mandible and that one of his elbows was touching his face and his tibiae had been reversed (Greenwell and Rolleston 1877, 217). At Cowlam barrow 59 a male aged 40-50 and around 1.68 m (5'7") in stature had been disturbed, he had the appearance of having been moved and replaced; the sacrum was close to the left scapula and several vertebrae were missing. This individual was also placed into a wooden lined grave which was not lidded. It is possible that this was his final resting place after an initial temporary burial. This individual was accompanied with a flint knife which was in the infilling of the grave (Greenwell and Rolleston 1877, 226). At Green Howe, burial 1, a male aged around 18-28 may have been disturbed as the cranium and long bones were missing. This male individual was thought to have been the first to be buried and may have been disturbed when a later female burial took place (Wood 1972).

#### 10.4 *Objects associated with burials*

As discussed in Chapter 6, materials thought to have been associated with status include gold, faience, bronze, amber and jet. Gold items have been found in various burial contexts throughout the UK, for example with the Amesbury archer and companion; at Bush barrow; Radley; Upton Lovell; Normanton barrow H; Cressingham; and Pendleton. Some gold items are found in unclear contexts, such as the gold armlets at Lockington where there were no surviving human remains. Gold may be a group belonging (as is considered likely for lunulae) which would make it a less common material for grave-goods (Jones 2002, 169). While gold grave-goods are less often discovered within the study area, objects made of bronze, faience and jet are. Within the Inhumation sample, 11 burials were associated with bronze items, of which three were from Derbyshire and eight from Yorkshire.

<b>Bronze object</b>	<b>Number burials (i)</b>
Dagger	3 males
Ring	1 male
Awl	6 females
Earrings	1 female

Table 43: number of males and females with bronze objects

Greenwell's study records nine burials with bronze awls (six of which are in this study) seven of which were in Yorkshire, of which five were female, one male and one unsexed individual (Kinnes and Longworth 1985). Only one bronze axe was associated with a burial (39.3 Butterwick).

From the cremation sample, six deposits were associated with bronze items, these comprised 3 bronze awls, two bronze daggers (one represented by rivets) and one unidentified bronze item.

Two of the Bronze awls were associated with female adults at Hindlow and Whitelow. The bronze daggers were from Loose Howe and Cold Eaton, the Loose Howe cremation was not possible to sex, the Cold Eaton individual was a female adult of young to middle age; this seems an exception to the general pattern of female objects.

Jet objects are less common within the study; one jet bead was associated with a cremation from Broomrigg, Cumbria, which was a probable female young adult. Three burials from the inhumation sample were associated with jet objects; one jet bead with an adult male at Siggett, Derbyshire; one jet bead accompanied an adult female at Langton 2, Yorkshire; and one jet button was with a young adult male at Ganton 27, Yorkshire. Also two pieces of jet-like material were with an adult male at Rudston 61. There were no pieces of faience or amber in the sample, though faience is known within the study area, such as at Beeley, Derbyshire (Radley 1970).

None of the single objects seem to be especially demonstrative of status. It can also be seen that particular materials were not gender specific. An examination of individuals with multiple objects in tandem with details of their burial context might be more likely to indicate some kind of status.

Whilst a single object may be unlikely to demonstrate status, a number of objects interpreted in relation to the osteological evidence is more likely to reveal details of an individual. This in tandem with details of the burial process may also indicate individual and group identities.

#### *10.5 Events which relate to construction of the burial monument*

Round barrows and cairns are varied in their development and use with different chronologies and practices occurring. Pre-burial site associations are seen at some sites, evidence of settlement or activity such as lithic scatters have been found as the earliest archaeological evidence at some barrows, such as at Hindlow.

As discussed by Last (2007b) round barrows may have started out as quite different sites such as flat cemeteries or stake-circles. Burials which are laid onto the ground surface may have begun as flat cemeteries. Within this study, 33 sites had burials which were laid on the ground surface prior to mound construction.

##### *10.5.1 Barrows as end products*

From Greenwell's information it is not clear whether sites he excavated would have started as flat sites. At least 20 of Greenwell sites in the study have burials which were placed on the 'old surface' and this may be evidence of the sites starting with a

different appearance where burials were first covered with smaller mounds which become barrows over time.

Other sites in the study which have a visible sequence may have started and ended as flat sites, such as at Moseley Height, Whitelow and Brackenber. Other sites which may have started as flat sites and ended with a more typical barrow appearance include Green Howe, Hindlow and Woodhouse End.

#### 10.5.2 *Barrow construction*

The construction materials which were used for barrows in most cases seem to have related to the available materials in the area, with cairns being more common in Derbyshire, Lancashire and Cumbria; while earthen barrows are more common in Yorkshire and Cheshire.

In Cheshire, Bearhurst barrow was made of sand, Sutton Hall from boulders and soil, Jodrell Bank from soil. Reed Hill was made from river boulders which were brought up from the valley below. Gallowsclough was created from eight different layers including red and yellow clay, white and grey ash stained sand and brown soils (Forde-Johnston 1960). Nowakowski (2007, 104) discusses the possible significance of barrow construction materials which at times seem to have been brought from some distance from the barrow site. At other times the mound is constructed from various contrasting layers as seen at Withington Hall. These different materials are thought to represent different qualities or places, or to have had mnemonic associations (Owoc 2002).

#### 10.5.3 *Barrows as vessels for the dead*

Burial areas within round barrows and cairns are at times sealed by a clay cap; examples include Gallowsclough, Cheshire and Noon Hill, Lancashire. At Gallowsclough Hill, Cheshire the cremated remains of two individuals were found; the main burial deposit was placed in a pit, the other deposit was slightly above this and other cremated fragments attributed to this deposit were scattered near the surface (Forde-Johnston 1960, 81). A circular capping of clay was placed over the burial feature.



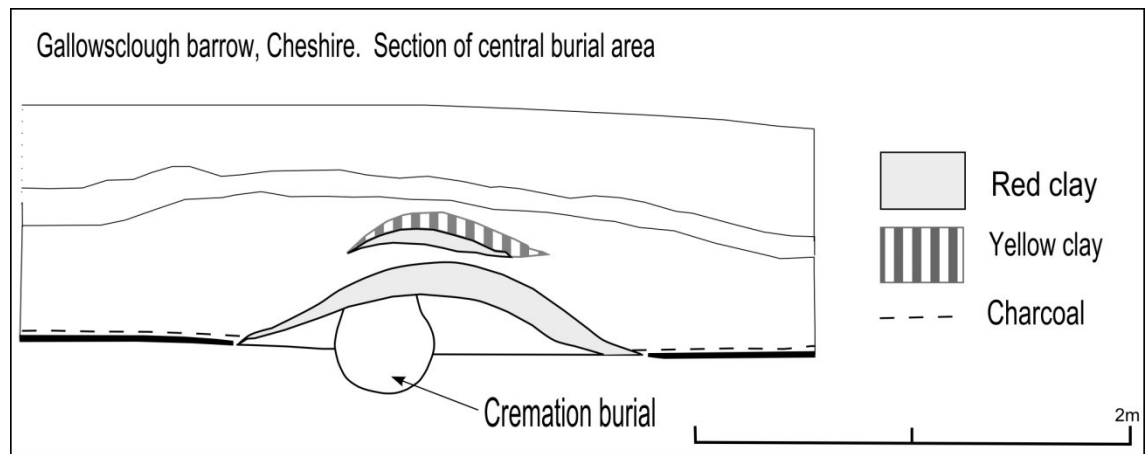


Figure 76: Part of the section plan from Gallowscrough barrow, Cheshire (after Forde-Johnston 1960).

At Rudstone 68 the barrow had a chalk capping at other sites such as Church Lawton North the mound is capped with turf (McNeil 1982; Kinnes and Longworth 1985). Using parts of the barrow construction as containers and closures may relate back to the wrapping of the corpse (discussed in chapter 5). Other structures and features may also be seen to shelter or contain the body or parts of the body. For example an older adult male at Folkton barrow 71 had chalk slabs placed around his head as if protecting it, this may reflect a concern with protecting the face of this person (Greenwell and Rolleston 1877, 278).

#### 10.5.4 *Burning events*

Burning seems to have been an important part of rites at numerous burial sites; burial may occur in relation to clearance, construction and burial even when there is no evidence for cremation taking place.

Examples of burning which are most obvious include: Church Lawton North, Brackenber cairn and, Whitelow. At Whitelow the majority of the pits where the cremations were deposited showed signs of burning to the soil surface. The remains of charcoal have also been found in association with inhumation burials such as at Weaverthorpe 49.

These areas of burning seem to relate to a part of the burial process, this might be in order to cleanse the burial area. Pits with evidence of burning may also be part of this process, it is possible that offerings not left with the burial are burnt in such pits or

perhaps materials which were associated to that individual which need to be destroyed.

#### 10.5.5 *Stone settings*

A form of elaboration which takes place at some sites is the creation of stone settings and monoliths. On site which is particularly unusual is The Bullstones, Cheshire. This is a cairn site which is classed by some as a stone circle; Morgan and Morgan (2004, 82) compare it to centre-stone circles found in south-west Scotland, such as Glenquicken. The Bullstones was excavated by Sainter and the Macclesfield scientific society in 1871 (Rowley 1982). Morgan and Morgan (2004, 79) describe the monolith as being 1.4m wide, 0.7m deep and 1.1m tall and surrounded by rounded stones. The stones and small boulders also form an incomplete outer ellipse (7.9m by 8.5m), which forms the perimeter of a small platform cairn. Opposite the monolith, Sainter describes an entrance at the north of the circle, made of a short avenue of stones. A line of stones also ran up to the edges of the cairn, leaving a small semi-triangular space on both sides, which according to Sainter, was big enough to accommodate four/five people standing in each. The cremated remains of one individual were discovered in an inverted urn, c.0.9m below the surface near the monolith at the centre of the site. The remains were thought to represent a child, but re-analysis has revealed that this is in fact a young adult (possible female) of small stature. Burned flints were also found with the remains.

Other sites with stones include Church Lawton South and Whitelow (see case studies) as well as various sites in Cumbria.

#### 10.6 *Are there regional differences in mortuary practice in northern England?*

Studies of Bronze Age mortuary sites have predominantly occurred in the South of England due to excavation and preservation biases. This means that influential interpretations have been derived from sites in the south. These ideas are unlikely to be all-encompassing for the UK; further investigation of mortuary practice in other areas may provide different answers to questions of variation in mortuary practices and regionality.

### 10.6.1 Site chronologies

Where possible the sites in the study have been categorised into a basic chronology using the artefact phases set out in Chapter 6. A number of sites had no artefacts directly associated with burials which limits this somewhat. The majority of burials which have been analysed were associated with food vessels and collared urns which date them to around 2050-1500.

Only forty sites out of 114 had enough contextual and artefact details for this; of these another eight sites had radiocarbon dates also (see appendix 16.7). Four of the dated sites are those in the case studies and the rest are from Barrowclough (2008).

Only a few burials were associated with beakers, these include: Rudstone 66, Liff's Low and, Castle Carrock. Woodhouse End, Church Lawton North and Goodmanham 113 also had beaker and food vessel associated burials and features, these sites had a longer use; from the radiocarbon dates Hindlow and Green Howe were also used for lengthy periods. For further discussion of the radiocarbon dates see Chapter 11.

### 10.6.2 *Regional comparisons*

In Lancashire although Early Bronze Age evidence is somewhat ephemeral, cremation seems to have been the most common mortuary practice; inhumations rarely survive due to soil acidity (Olivier 1988). However there are known examples where inhumations have been found, both antiquarian and recent. Also there are examples where it seems likely that inhumations were deposited such as at Shuttleworth cairn. There seems to be a trend towards less obvious sites such as ring-cairns, platform cairns and other ring-works such as subtle, small stone circles. Examples include: Whitelow, Cheetham Close, Moseley Height, Jepson's Gate, Hell Clough and Noon Hill. Both Whitelow and Cheetham Close ring-cairn have an outer bank and a smaller cairn within (Fletcher 1985).

In Cheshire a total of 212 round barrows are recorded, most are badly preserved due to a combination of agriculture, antiquarian activities and quarrying. Most of the barrows are clustered around the central sandstone ridge and the edges of the Pennine uplands (Leah et al. 1997, 150; Mullin 2007, 86). Single barrows are the most common, out of 212 less than a quarter of these are grouped (Mullin 2007, 86).

The majority of burial evidence is for cremation (both urned and un-urned) but this may be due to acidic soil conditions, possible inhumation sites being Woodhouse End and Church Lawton. Other types of mortuary sites in Cheshire include single-urn burial sites (some of which may be ploughed out barrows such as Betchton) and possible stone circles. Sites in Cheshire reputed to be stone circles include: The Bullstones, Church Lawton South, Grappenhall and Butley, of which only the Bullstones is surviving in any recognisable state (Morgan and Morgan 2004).

In Derbyshire and the Peak District Bateman excavated 190 barrows and another 122 sites were excavated by Carrington on his behalf (Barnatt and Collis 1996). The high number of sites excavated by Bateman and other antiquarians creates some biases. Barrows were usually only partially excavated in the centre, due to this approach to barrow excavation, stratigraphic sequences were hardly understood. Unfortunately 19<sup>th</sup> century accounts are often the main written source of evidence where sites no longer exist or the assemblages have been lost; this means that these early accounts are often relied upon though they are likely to be inaccurate or misleading (Barnatt and Collis 1996, 11). Of more recent investigations in the region, around 34 Bronze Age barrows have been excavated; half of which were well investigated for example Bee Low (Marsden 1970) and Liff's Low (Barnatt and Collis 1996); the rest were only very limited excavations. Within the region mortuary mounds may be constructed of soil, stones or a mixture of both. Burials are found in graves, stone-slab cists or rock-cut graves (Barnatt and Collis 1996). Marsden argued that there may have been a practice of the burial of 'heaped' bones which were previously disarticulated, for example at Lathkill Dale (Marsden 1964). There seems to be a preference for cairns, as well as the use of natural limestone for 'graves'.

In Cumbria, stone cists and small stone circles are often incorporated into barrows and cairns. For example at Moorhouse, a cist, 2 1/2ft in diameter, lined with cobbles and surrounded by a stone circle, was discovered when ploughing a field adjoining the stockyard of Moorhouses Farm in 1869. Inside it was one urn full of fragments of burnt bones. In the adjoining field, SE of the farmhouse, another cist, 34 ins long 21-26 ins wide and 18 ins deep, was found in 1874. It was lined with stone flags and contained a crouched inhumation, a food vessel and a drinking-cup

Burials are often associated with stone circles, for example at Moor Divock and Brat's Hill. Some of these burial sites, called kerbed circles, became infilled over time and more barrow like. Broomrigg C for example was first thought to be a stone circle but when it was excavated revealed that the earliest phase of the site was a kerb cairn (Hodgson 1952).

In Yorkshire, many round barrows and cairns have been excavated, most of these by antiquarians (Greenwell and Rolleston 1877). The majority of excavation of round barrows has taken place in the Yorkshire Wolds.

The modal form (of burial in the Yorkshire Wolds) was of crouched inhumation, either lying on the old ground surface or in a grave (shallow or shaft-deep). A grave at Rudston 62 was 10.5 feet beneath the old ground surface, but there were also cremations and multiple burials. Pit graves were often lined as wooded cists or else inhumation took place in a monoxylous coffin or on a wooden platform. About 30% of burials had an accompanying pot, usually a beaker or food vessel but sometimes a collared urn; less than 15% included jet or bronze (Brodie 1994, 23).

Monuments in Lancashire and Cumbria seem more similar in structure but the Lancashire sites tend to have been constructed on a smaller scale.

County	Barrow	Cairn	Ring cairn	Ring work	Flat cairn	Stone circles	Cremation	Inhumation
Cumbria	X	X	X			X	X	X
Lancashire	X	X	X	X	X	X	X	X
Cheshire	X				X	X	X	X
Derbyshire	X	X					X	X
Yorkshire	X	X					X	X

Table 44: types of sites and burial practices in each area

Inhumations and cremations occurred in all areas, although inhumations have rarely survived in Lancashire, Cheshire and Cumbria due to soil acidity. Use of natural mounds and other natural features such as limestone bedrock is apparent only in Derbyshire and Cumbria. Stone circles and settings which relate to barrows or ring-works are most common in Lancashire and Cumbria; this does not seem to extend south into Cheshire, although there is an example of a stone circle and barrow at Church Lawton South.

### 10.7 *Conclusions*

The burials in this study demonstrate a continuing sequence of events from the preparation of the dead and the burial area through the burial rite and closing of burials and/or sites. The deceased are carefully ornamented, wrapped and contained. Objects such as bone pins can hint at the decoration or fastening of clothes on the body and may show when artefacts were worn. During the cremation rite, artefacts were most often included in the pyre and this may further reflect the dressing of the body or the ritualised disposal of inalienable objects.

Organic remains associated with burials indicate the short term decoration and wrapping of the body; surrounds which are made of chalk or stone give a more permanent and enduring picture of the ways Bronze Age people displayed the dead.

The containment or wrapping of the dead can also be seen in the ways these sites were constructed, individual burials and areas of mounds were capped with materials such as chalk and clay. These materials are likely to have had meanings perhaps in their colour, texture and mechanical properties. Clay for example, is likely to have been associated with the creation of pottery as well as for the closing of certain burials.

The central or first burials may have been the 'founding' burials; the dead may have had to fulfil certain criteria to be buried centrally. Alternatively, if Early Bronze Age people were pastoralists who were at least partly mobile the creation of a suitable burial place may have been necessitated by death where there was no place for burial. Sites which were used and returned to over long periods of time may reflect the practice of burial at places which were visible to people moving with their livestock through seasonal cycles.

The significance of multiple and double burials might be seen as an indication of social ties, real or perceived through time and memories which are passed down.

### **Part 3: Case studies**

One of the aims of the PhD was to work from the smallest scale outwards creating an osteologically informed archaeology in order to understand questions on mortuary variability and identity. While the overall results of the study (seen in chapters 8, 9 and 10) resolve questions on a larger scale, the case studies focus in on individuals, their life histories and site biographies. The purpose of the case studies is partially one of chronology and part an exploration of time and place which is unique in each of the sites. This uniqueness is created by the influences of deposition history, local traditions and individual actions. Of the five case studies, four have been radiocarbon dated. The processes and chronologies of these sites will be compared to examine regional variation in burials and the creation of identities.

These case studies alongside the individual osteobiographies are an attempt not only to access identities and life histories, but also to bring forth the human element which is often lacking in results which come from osteoarchaeological analyses.

## Chapter 11: Site case studies

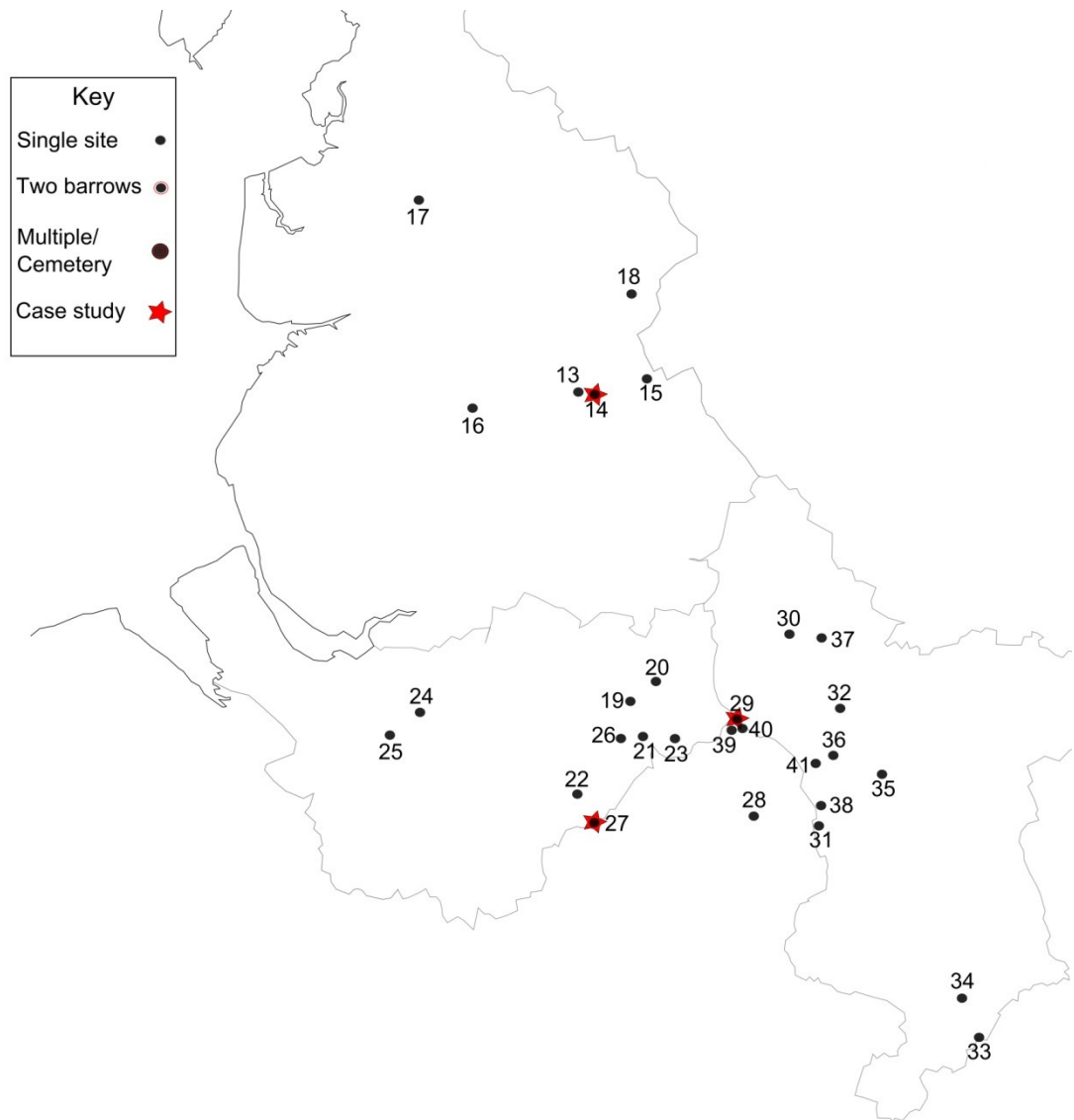


Figure 77: Map of sites in west group, showing location of case studies in this area (Hindlow - 29; Church Lawton – 27; Whitelow – 14).

### 11.1 *Hindlow round cairn, Derbyshire*

#### 11.1.1 *Introduction*

A reanalysis of the human remains from Hindlow situates the burials in their context. The case study uses radiocarbon dates to reveal a new chronological sequence (see also Walsh in press – appendix 16.9). This new sequence demonstrates a series of individuals, their life histories fitted into the site biography which begins in the Neolithic and continues through to the end of the Early Bronze Age. The individuals



and the site are interpreted through processes which relate to identity.

### 11.1.2 Background

Hindlow round cairn in Derbyshire was partially excavated by Thomas Bateman in 1845 as part of his investigation of four sites of which this site was the third (Bateman 1848). Bateman discovered the remains of three adults and a child, of which he removed only the skulls; he did not find a primary burial. Bateman only excavated c.20% of the barrow (Barnatt and Collis 1996, 14). In 1953 the cairn was fully excavated by Ashbee and Ashbee (1981), as the cairn was about to be destroyed. During this excavation (see figure 53) the burials of around 23 individuals were discovered; four of the skeletons were articulated and in stratified sequences with earlier disturbed burials. Mortuary processes at the site included both cremation and inhumation; there was only one burial which was associated with an artefact.

Similar sites within the area include: Bee Low (Marsden 1970), Wigber Low (Collis 1983), and Roystone Grange (Hodges et al. 1989).

### 11.1.3 Chronology

The sequence of Hindlow cairn was thought by Ashbee to follow two phases of cairn construction, associated with two distinct phases of burials. A number of the human remains were recently radiocarbon dated to examine the validity of this chronology (see table 37).

The results of the radiocarbon dates indicate that burial 2 (previously thought by to be associated with the later phase barrow elaboration) dates to around the same time as a cremation in the SE quadrant area of burials.

Date	Burial	Dates BP	Cal BC (95.4%) (unmodelled)	Modelled dates Cal BC
OxA-25385	Bateman cremation	4244 ±32 BP	2915-2703	2914-2699
OxA-25384	Scatter 1	3783 ±32 BP	2335- 2057	2281-2040
OxA-25380	Burial 1	3682 ±32 BP	2193- 1963	2187-1959
OxA-25383	Burial 8 (scatter 2)	3617 ±32 BP	2119- 1890	2118-1891
OxA-25382	Burial 2	3565 ±31 BP	2022- 1777	2024-1820
OxA-25386	Main cremation	3564 ±33 BP	2022- 1776	2024-1787
OxA-25387	Burial 5	3523 ±32 BP	1936- 1753	1952-1776
OxA-25381	Burial 4	3312 ±30 BP	1681- 1518	1680-1520

Table 45: radiocarbon dates from the Hindlow human remains

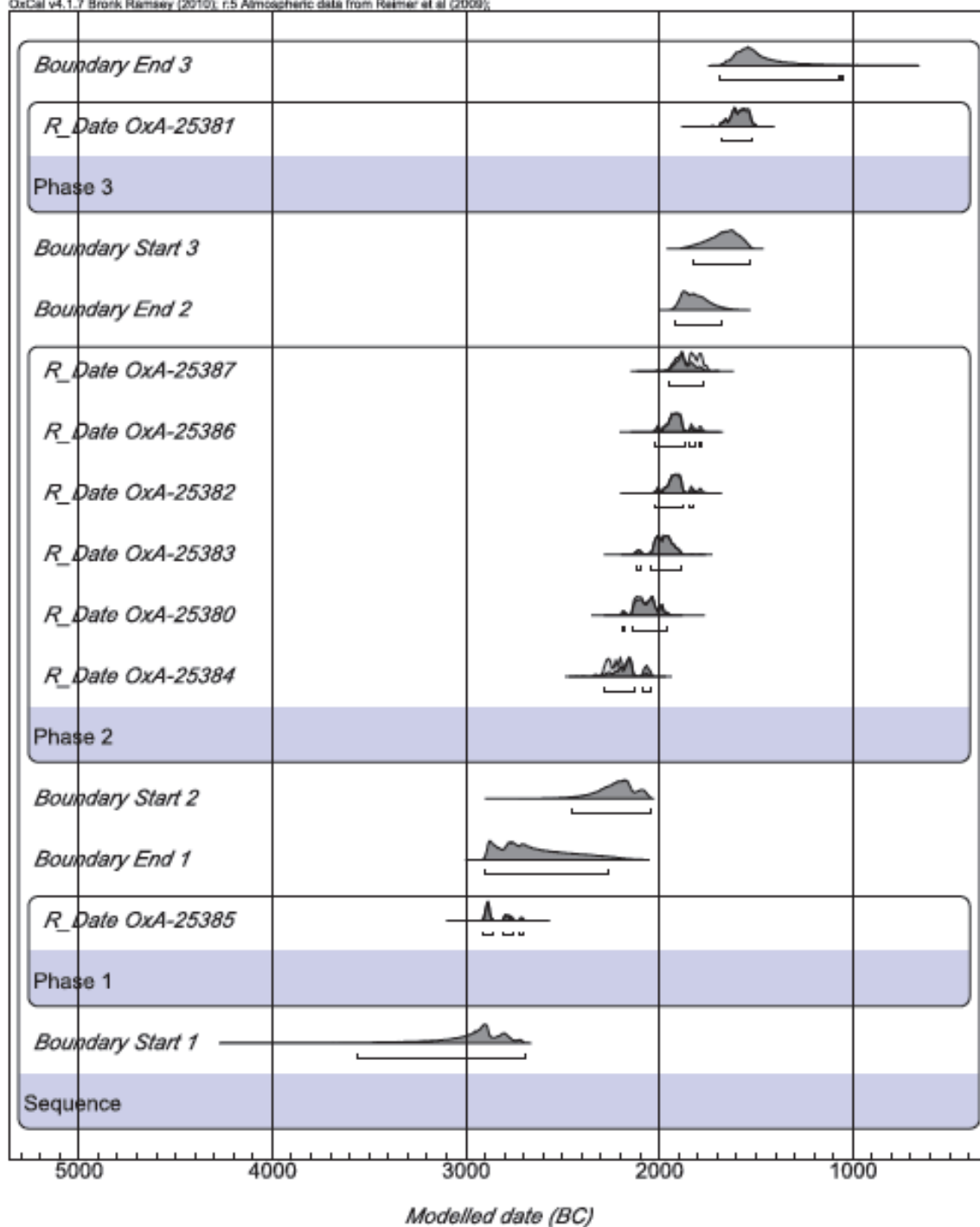


Figure 52: Modelled dates from Hindlow cairn showing the three phases of burials.

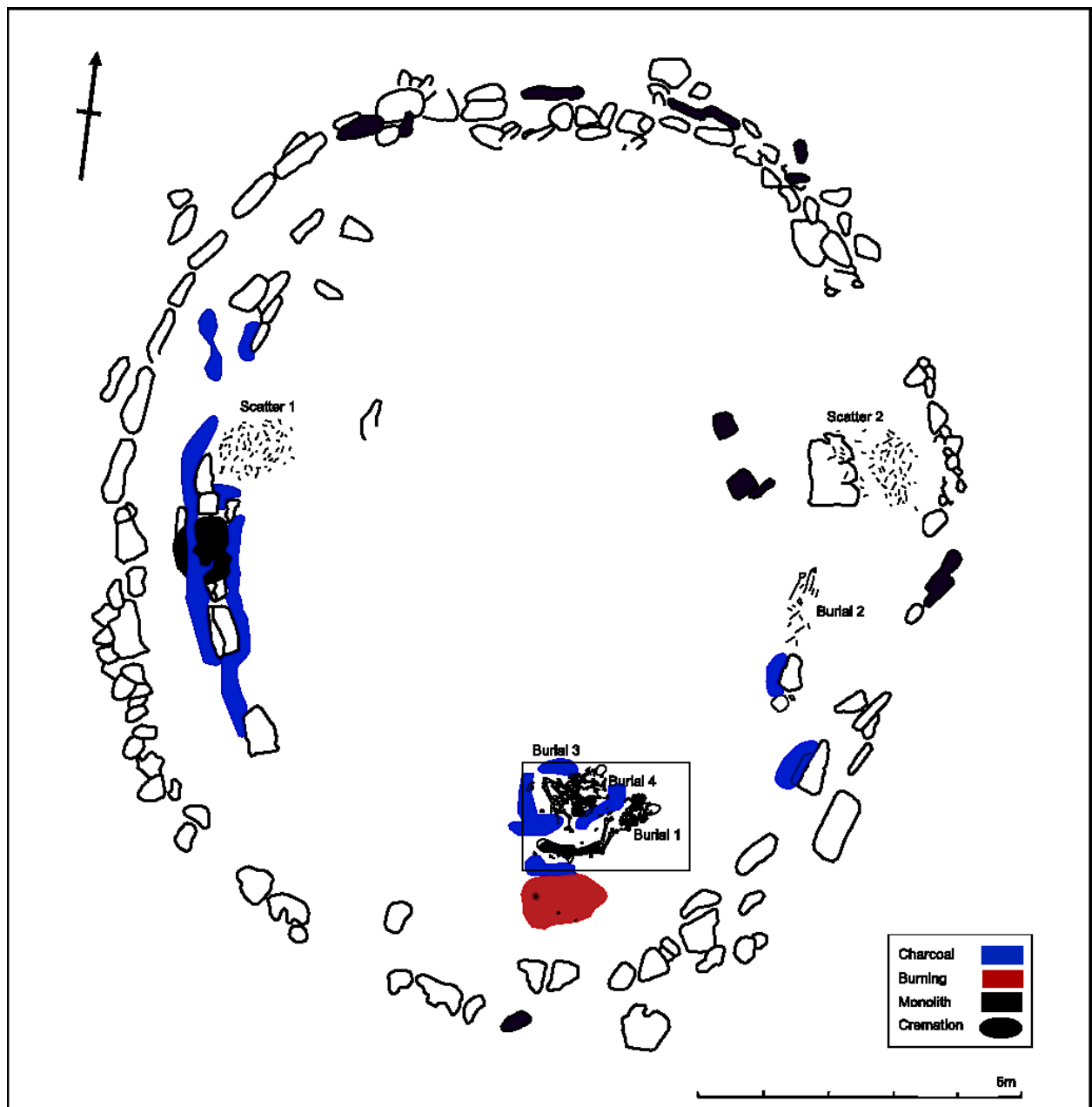


Figure 79: Plan of Hindlow round cairn (after Ashbee and Ashbee 1981).

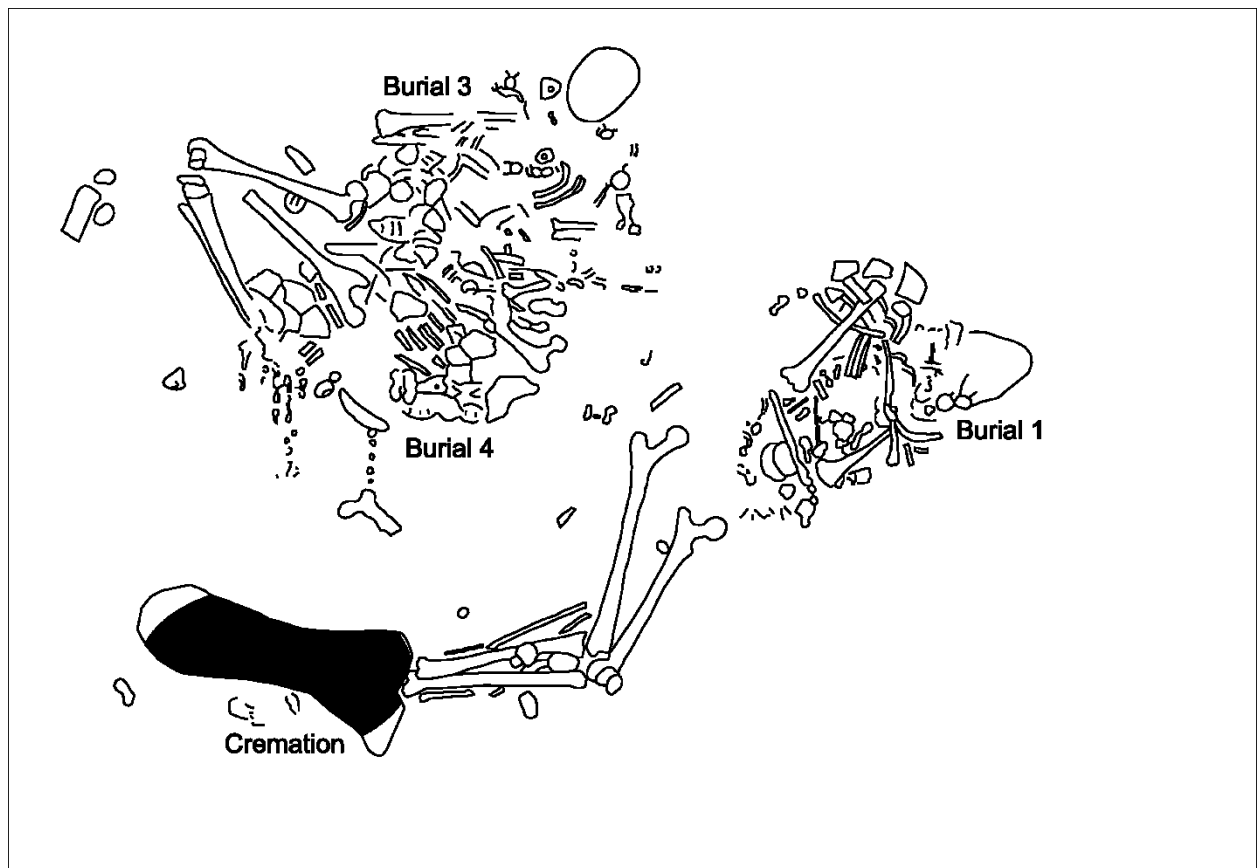


Figure 80: Inset of figure 79 (above)

#### 11.1.4 Osteological summary

The human remains from Hindlow have an MNI (Minimum Number of Individuals) of 23; this includes the remains of individuals left behind by Bateman. The majority of the remains are inhumations, with only three cremation deposits. Five of the adult inhumed individuals are highly fragmented and also at times scattered.

Overall there was a majority of at least seven adult males but also there were five neonates and one young infant (see appendices 16.2 and 17.5). There were female individuals but these were earlier in the sequence and more fragmented. All age groups were represented in the assemblage.

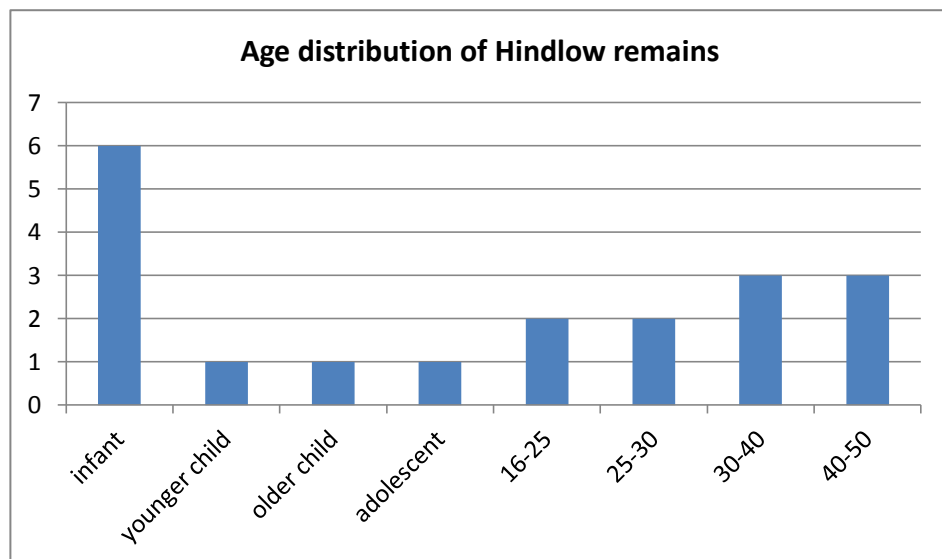


Figure 81: The age distribution of the Hindlow individuals (excludes 3 NP to age)

The palaeopathological evidence included indications of osteoarthritis and joint degeneration of the spine, which together probably indicate strenuous activity, perhaps agriculture. Other indications of disease included osteoporosis, linear enamel hypoplasia, periostitis and mandibular abscess.

In comparison with the rest of the inhumed sample, the Hindlow individuals had a low prevalence of linear enamel hypoplasia and periodontal disease, and none of these individuals had suffered from cribra orbitalia. On the surface these individuals seem healthy but this is possibly due to not surviving long enough to develop lesions (as discussed in chapter 3).

#### 11.1.5 Lifecourse, burial process and site sequence

The earliest burial activity was a cremation deposit found by Ashbee near the centre of the barrow, which had been disturbed by Bateman. The cremated remains were found scattered over the pre-barrow surface and date to 2915-2703 cal BC. The remains are a probable male adult, these bones had been efficiently cremated but were only 2.21% complete (36g). This could be due to the amount of the remains which were deposited, or perhaps was due to disturbance from Bateman's excavation. The remains are mostly comprised of cranium and limb bones; there is no distinct evidence of a pyre although Ashbee discusses areas of burning in different areas of the site. This individual went through a two stage process of burial, and may have been moved from the pyre site. The deposit may have been a token or scatter, the cremation was not

contained and was not associated with any artefacts as is possible to tell. The cremation deposit may have been a lone deposit prior to cairn construction.

Other early activity is seen in the evidence of lithic debris and beaker sherds, the site may have been an occupation site. These early activities may have led to the site being remembered and returned to over the centuries.

The first phase of the cairn was around 9 m in diameter and was defined by roughly recumbent limestone blocks and the cairn was filled with other blocks of limestone. The elaboration of the cairn was constructed with stones which were smaller than those used to construct the earlier phase cairn.

The next dated burial event is bone scatter 1 (2335-2057 cal BC) this also is the earliest definite date for the cairn structure. Bone scatter 1 is the remains of three juvenile individuals which were found among the loose stone at the base of the cairn and on the ground surface (Ashbee and Ashbee 1981, 15). Two of these individuals were neonates and one was a young child aged 2-3 years. Due to the scattered nature of the deposit it is possible that the remains were placed higher up in the cairn and have degraded and fragments have fallen through the stones, it is also possible that the remains were manipulated or exposed; the same possibilities are likely for bone scatter 2. Despite the degradation of these remains, these juvenile individuals appear to have been left undisturbed by later burials.

The remains of a child aged around 10 (burial 1A) were fragmented in the area underneath and around Burial 1. This juvenile individual has evidence of childhood stress. The dentition has linear enamel hypoplasia, there were two interruptions to Burial 1A's tooth development which occurred between the ages of 4-8. These enamel defects occurred over four teeth, this indicates two episodes of systemic disturbance caused by fever, malnutrition or other physiological stress. This individual was buried and their remains were later disturbed by the insertion of burial 1.

Burial 1 was dated to 2193-1963 cal BC, this was an adult male individual aged around 20-30 years. Burial 1 at 1.85 m (6'2") in life was at the larger end of stature for Early Bronze Age males and is the tallest individual within the overall inhumation sample. This man's limb bones were quite long but not highly muscular; this man was also right handed. He also developed mild osteoarthritis to some limbs and parts of his spine; this was probably caused by activities. He also had mild periodontal disease. During

life burial 1 had developed an infection to the area of his right temporal (around the ear) and jaw (see chapter 9). The man's cranium shows that this infection caused recurring layers of bone to form, some of which were still active around the time of his death. It is possible that this infection led to infectious meningitis and death.

At the time of his burial, Burial 1 was laid on his left side with the legs partially flexed and the arms crossed. In comparison to the positioning of burials 3 and 4, burial 1 is barely flexed.

The next dated burial (2119-1890 cal BC) was burial 8. This was a robust, young adult male aged 17-25. Burial 8 had Schmorl's nodes on his lower spine; these were not severe and may indicate a limited time of heavy labour. This man also had an abscess on his mandible which had drained and showed signs of healing before death.

This individual was deposited within the area of bones known as scatter 2 which also included the remains of an infant aged around 1-3 months and also an adolescent. The scattered deposits may indicate a later need to forget the earlier dead or assert some form of new memory over the burial area. It is possible that these individuals are connected in an identity which relates the different age groups.

Burial 2 was dated to 2022-1777 cal BC; this individual was placed in the east of the site and was thought by Ashbee to be a later burial due to the stratigraphic position. Burial 2 was an adult male and at age 40-50 years was the oldest individual at this site. Burial 2 appears to have been a right handed, robust individual. Burial 2 had developed a thickened cranium and this may have been caused by age and/or malnutrition. This man also had periodontal disease which was moderate and had resulted in the loss of a front tooth during life.

The man had some parts of his spine which had fused; the second and third cervical vertebra are fused at the vertebral bodies and the articular facets, there is also expansion and alteration of the inferior surface of the articular facets of C-3. The fifth lumbar vertebra is fused to the superior surface of the first portion of the sacrum, there is extra bone on the spinal processes. The other lumbar vertebrae also had extra bone growth on the vertebral body surfaces as if they were also starting to fuse together. This individual is likely to have had a seronegative spondyloarthropathy such as Reiter's syndrome, psoriatic arthritis, or ankylosing spondylitis. Out of these the

fusions of the vertebrae most resemble Reiter's syndrome as there are areas of normal spine between fused areas. Reiter's syndrome may be caused by gastro-intestinal infection (Rogers et al. 1987).

This man was buried in a supine and extended position and he was separate from the other burials. Burial 2 was also associated with the remains of a neonatal infant. Most Early Bronze Age burials are placed in a flexed position on the side; this is one of only two positioned in this way within the sample. It is possible that his liminal burial placement and extended position was symbolic of illness or another identity.

The main cremation deposit dates to around the same time as burial 2, at 2022-1776 cal BC. These remains are of an adult female aged around 30-45 years. These cremated remains were placed near the feet of burial one and were associated with a bronze awl which had also been in the cremation pyre. There were also signs of burning in the area around this deposit; a charcoal deposit includes fragments of charred bone which may be part of this individual.

This cremation deposit has a large amount of variation in colour, the majority of the remains are grey-blue, some cranium is white, upper limb bones are brown-grey and lower limb bones are white-blue. This means that the upper limbs were not as well cremated this also applies to the occipital bone of the cranial bone which was brown-grey in colour. This may have been caused by the position the body was cremated in or the cremation pyre may have been inefficient and burned unevenly.

The bronze awl is an object which is mostly associated with females and may indicate an identity relating to leather working or other craft work and femaleness. The placement of this individual at the foot of burial 1 may indicate the returning of individuals who associated this person with burial 1.

Another adult male burial, disturbed by Bateman, was a very robust older male aged around 30-40. It is not clear where or how this individual was placed in the cairn other than that it was from the area disturbed by Bateman, however, it was said to be stratigraphically similar to burial 2. Bateman's 'old man' had osteoarthritis of the hips and spine; the vertebrae have expansion, porosity and destruction of the joint surfaces. The individual also has possible osteoporosis of the spine which is more common in older females. This adult male has strong muscle attachments on the radii of both forearms; this probably indicates flexion and supination during some activity.



The next burial in the chronological sequence is burial 5, an adult female whose remains were extremely fragmented, scattered and disturbed, possibly caused by the insertion of burials 3 and 4.

Burial 4 is the last radiocarbon dated burial in the sequence and dates to 1681-1518 cal BC (which means that burial 3 must be contemporary or later). This burial was of indeterminate sex and was aged around 35-50. Burial 4 had thickened cranial bones which may have been caused by increased vascularisation and age; this individual also had mild osteoarthritis, caries, abscess, and ante-mortem tooth loss, these dental pathologies followed from the caries. Caries in agricultural societies may indicate a diet high in carbohydrates (Hillson 1996). This individual was laid on the left side in a flexed position in reverse orientation to burial 3. The head of burial 4 had been covered by the legs of burial 3.

Burial 3 was a male adult aged 20-25 who was placed in a flexed position on the right side. Burial 3 suffered from periodontal disease, osteoarthritis and Schmorl's nodes. The alterations to the joints are symmetrical and affect the knees, distal forearms, second cervical vertebra and the right talus as well as the metacarpals. The vertebra and talus had eburnation which is integral to the diagnosis of osteoarthritis; the Schmorl's nodes affect the lumbar spine. These pathologies may reflect some activities such as farming or heavy lifting.

Burials 3 and 4 were the last insertions in the sequence and are late examples of inhumation practice which is usually replaced by cremation at this time.

These two burials are also interesting in their intertwined placement, burial 4 the older individual was placed before burial 3, the younger adult male. Burial 3 was partially disturbed and masked by burial 4; this may be interpreted as the assertion of a dominant identity, a connection, or an affirmation or negation of an identity.

#### 11.1.6 *Discussion*

Overall there are three burial practices which are visible at Hindlow: inhumation, cremation and disturbed/scattered burials which probably started as inhumations.

The earliest activity was a Neolithic cremation which may indicate a connection to the place and also a relational ancestor, become mythological through practices of histories which were passed down. Knowledge may not only have been within one

group, movement and interaction may have led to the spread of knowledge of a place which was significant. Overall the site was used repeatedly as a mortuary site over a thousand years.

There are a number of disturbed or scattered individuals which are earlier on in the sequence of the site. Some of the scattered deposits were then left without further disturbance; other areas of the site continued to be used for a sequence of burials, the latest of which seem to have been undisturbed. Scatter 1, for example, is a burial area only made up of very young children whose burials are the earliest inhumed remains at the site. There were no later complete burials over this deposit which may indicate some respect or fear of these remains. The scattering of these burials and lack of further insertions may also indicate some need to forget.

Scatter 2 comprises both children and an adult, in this area of the cairn these individuals became mixed up and scattered together.

Two adult burials have disturbed or accompanied the remains of children (burials 1 and 2) this may indicate some need to have an adult burial with or after the juvenile burials. These individuals may have been seen as children which needed to be accompanied, covered over or forgotten.

Burials 3 and 4 are a tantalising glimpse into a meaningful relationship or story which may have led to the closure of the barrow. After burial the bones of these two individuals became integrated and mixed together into one; their identities becoming merged as one over time.

The continued deposition of bodies in the south part of the cairn seems to show knowledge of the placement of these burials. It may be possible that burial areas were left open for some time. The returning to and disturbance of earlier burials may indicate a need to connect the older deceased with the more recent deceased; this could be argued to be positive or negative. A positive connection could be interpreted as an affirmation of belonging to a particular social group. The negative alternative would perhaps be the purposeful destruction of the older remains, which are replaced with preferred bodies for whatever social or political reason.

It is also possible that the site was not always used by people from the same group, different groups may not have known about earlier insertions, and territorial boundaries are likely to have moved over such a long time.

Places may act as vehicles for memory (Fowler 2003, 56) Hindlow may have functioned as a long term repository for the destruction of these lives. In order to forget them, the dead are removed from the living allowing distance to be created between the living and the dead (Fowler 2003, 59).

The predominant identity at Hindlow is of adult males, both young and older adults. Some of these individuals are also associated with the remains of children. While it is possible that juvenile burials may have been placed with adults for convenience, there may have been a cultural norm where juveniles needed to be buried with an older individual.

## 11.2 Church Lawton round barrows, Cheshire

### 11.2.1 *Introduction*

Two round barrows; Church Lawton North and South near Alsager, Cheshire, were excavated by Robina McNeil and the Liverpool Archaeology Unit in the early 1980s. These excavated barrows at Church Lawton are two of three known barrows; the third was levelled in the early 20<sup>th</sup> century. The results of the excavation were never fully published; only an interim report was published in the local journal (McNeil 1982).

19 cremation deposits were analysed along with other artefacts which were found with the cremated human remains. New artefacts which were found include fragments of burnt flint and bone pins. The human remains have an MNI (Minimum Number of Individuals) of 24. The majority of these individuals are adult, but there are a few juvenile individuals also, both males and females are represented. The high weight of several of the cremation deposits seems significant as this is thought to be a rare occurrence (McKinley 1997). The colour and fragmentation of the remains indicates an efficient cremation pyre burning at 600°C or more. Cremation slag was found in three of the cremation deposits and is elementally consistent with that in published examples.

### 11.2.2 *Background - Church Lawton North*

The north barrow appears to have two phases of construction and use. Firstly, an irregular, roughly circular ditch was created, which had partially silted up before a sand mound was constructed within it. According to McNeil's site notes, the ditch was sealed at all points by the phase 1 barrow, which may be due to slumping onto an already silted up ditch. The ditch can be dated from Beaker sherds. The ditch was radio-carbon dated in the 80s using charcoal but this resulted in a wide date range (2136-1692 cal BC).

A 'boat-shaped' pit was at the centre of the mound, this pit was covered with a wooden lid dated 2040-1600 cal BC (Mullin 2007, 86). There were no signs of inhumed remains, but it is possible that these may not have survived the acidic soil conditions. There were 19 cremation deposits (although F10 and F34 have so little bone they hardly count), most were in pits which were dug into the mound, four of these were deposited outside the ditch (McNeil 1982, 46). Two of the cremations were possibly in

some sort of sack or bag. The pits varied from shallow bowl-shaped depressions with small amounts of charcoal to cylindrical pits with cremation deposits at the base and large amounts of ash and charcoal over the remains. Two pits (F16 and F26) contained small food vessels (one inverted, one upright) which did not contain human remains. At least three other urns were present; one was a complete biconical urn, positioned upright with cremated remains within. Two of the burial pits also contained stone tools, one a plano-convex flint knife which had been burnt and was in three pieces, the other had a battle-axe placed behind the bones. During phase one the barrow was around 16m in diameter and 1.40m high (McNeil 1982, 47).

During the second phase the existing structure was enlarged with sand covered in turf, to around 30m in diameter and became more elliptical in shape. It is unclear exactly how many of the cremation deposits are associated with this second phase. At the east section of the site were three bowl-shaped pits (F5, F11 and F15) which had stake-holes in the base and sides, the surfaces of these pits were burnt and filled with charcoal and ash. At the top of one fire-pit was a circular decorated pottery base, possibly an urn.

McNeil has interpreted these features as fire pits where disarticulated bones were supported over fire until the cremation was complete (McNeil 1982, 47). Two of the fire pits were dated to 1890-1510 cal BC and 1770-1400 cal BC (Mullin 2007, 88). According to McNeil's site notes, 'F5 is quite spectacular; below a ring of charcoal are stake holes set around the edge and into the edge of F5 at various angles'. 'Stakes were rotted or removed and ash and charcoal from the fire fell into the voids'.



Figure 82: Photo of 'fire-pit' F5 courtesy of the Grosvenor Museum.

Gibson (2007) discusses the possibility of pits being used for cremation, for example, at Carneddau, Powys a pit contained the cremated remains of an adult female and child. Gibson argues that a complete body could not have been cremated within the pit. As there were no indications of a pyre built over the pit Gibson argues that this is evidence of defleshing prior to cremation within the pit. Gibson also cites the mixing of the bones with charcoal as evidence of the stoking of the pit (Gibson 2007, 58) alternatively these features could be part of an extended burial process. McKinley (1997) discusses the possibility of pits underneath cremation pyres for increased air flow.

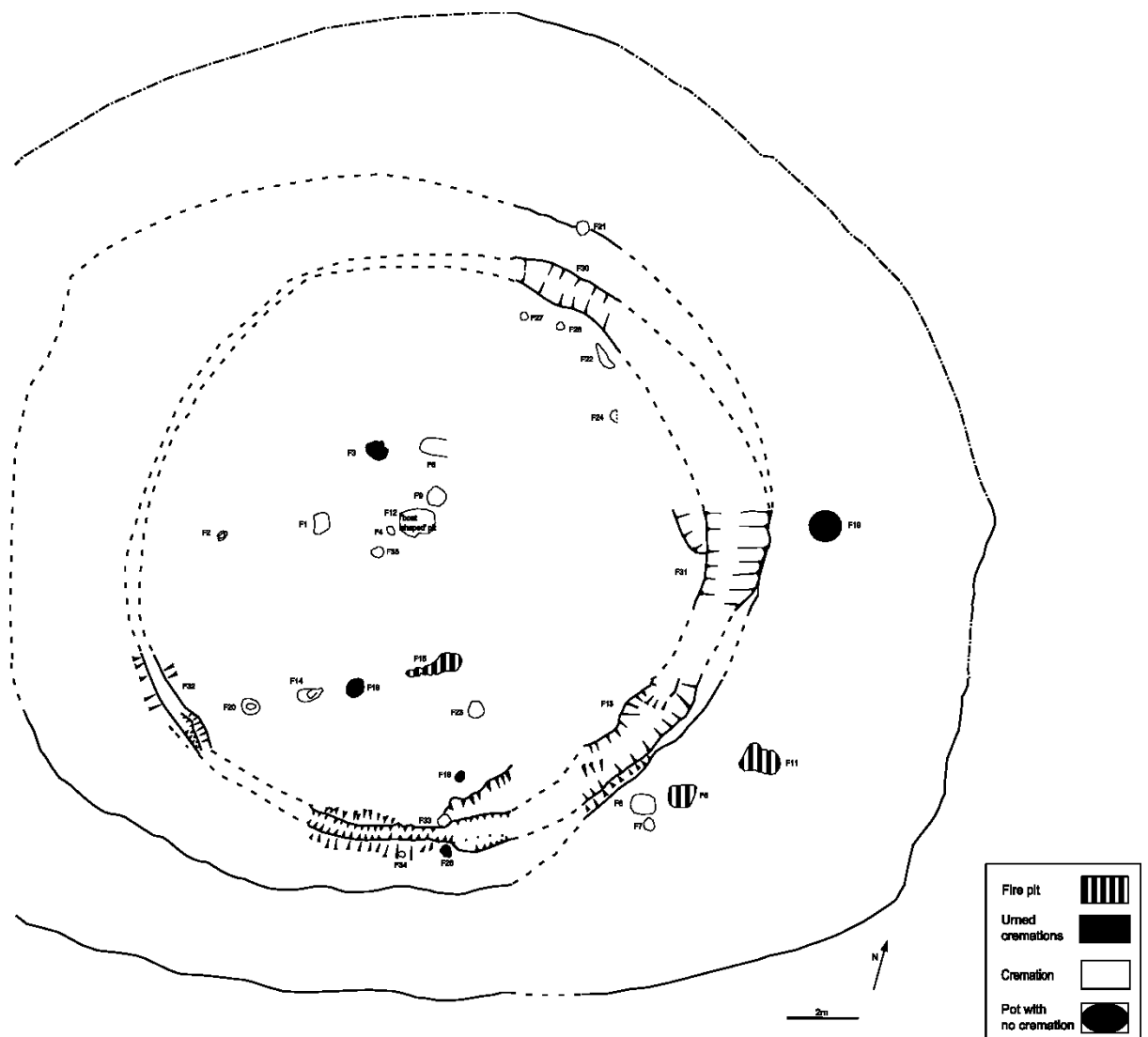


Figure 83: Plan of Church Lawton North (after McNeil –Archive held by Cheshire Museums Services).

### 11.2.3 Background - Church Lawton South

The south barrow was also constructed from sand; this was taken from the surrounding sub-soil and then partially surrounded by a small turf wall. No burials were found within the mound. In the centre of the barrow there was a roughly rectangular structure (made of turf and daub) which has been interpreted as a mortuary house. A piece of burnt timber was also found which seems to have been part of the structure. One fragment of cremated scapula was recovered from this structure.

This barrow was different to the north site as it has a circular setting of nine large, glacial erratic boulders; these were set roughly 5m apart with a gap to the north and south creating two semi-circles. The diameter of the mound and circle was 22-25m. Two of the boulders were upright and the other seven on their sides; the stones had been set this way on the old ground surface (McNeil 1982, 48). McNeil states that it is unusual for a combined stone circle and barrow to be in a lowland area.

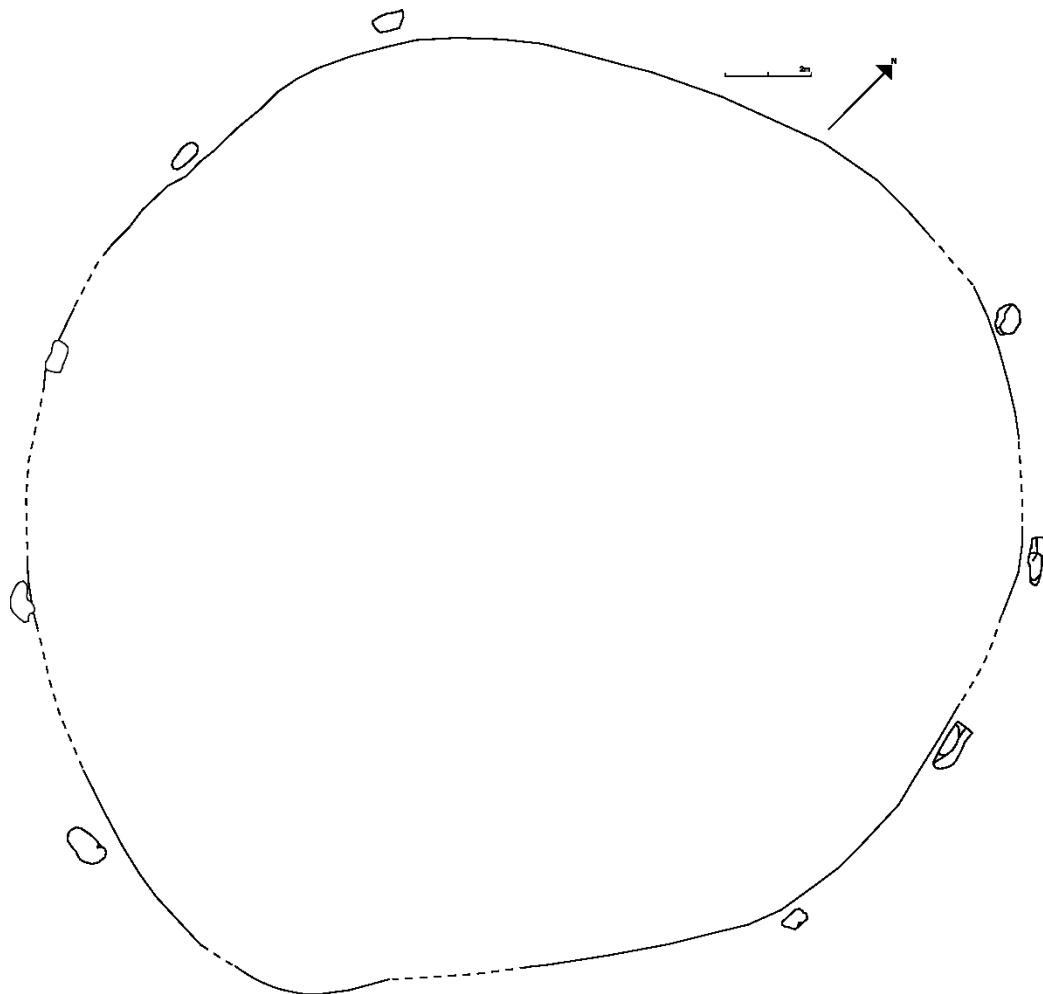


Figure 84: Plan of Church Lawton South (after McNeil - Archive)

#### 11.2.4 *Osteological summary*

There were 19 cremation deposits although some had very low weights. However those deposits with low weights may have been cremations which have not survived or are perhaps a remnant of the cremation process. No palaeopathology was observed. There were a minimum of 24 individuals identified (see appendix 17.2).

The individuals which it was possible to age were spread through age groups. There were 5 juveniles (including adolescents) of these there was one residual juvenile (possibly infant) a younger child and three adolescents. There were 14 adults of which: one was a younger adult, one was a younger to middle adult, five were middle adults, one was middle to older adult, two were older adults and four individuals it was not possible to say more than that they were adults.

There were four adult males and four adult females; sex estimation of the other 16 individuals was either not possible or not applicable. 10 other adults were not possible to assess for sex.

#### 11.2.5 *Cremation weight and fragmentation*

According to McKinley (2006) the weight of a cremation deposit, along with other factors such as fragmentation and colour can indicate pyre efficiency and pyre temperature.

<b>Cremation</b>	<b>Weight (g)</b>
F18	1098
F20	1593
F9	1960
F2	1016
F35	924.5
F23	1904
F19	218.3
F27	939
F33	1377.5
F28	107
F24	1053.5
F14	1363
F5	20.5
F3	42
F7	315.3
F1	247
F10	0.4



F6	53.3
F34	2

Table 46: weights of the cremation deposits from CLN

It is commonly thought that the remains of a body cremated on the pyre were not completely collected for burial in a pit or pot (McKinley 1997). At Church Lawton North five of the deposits are 1300g or more, which is within the average range for a complete cremation. Such large weights of cremated bone are thought to be unusual (McKinley 1994).

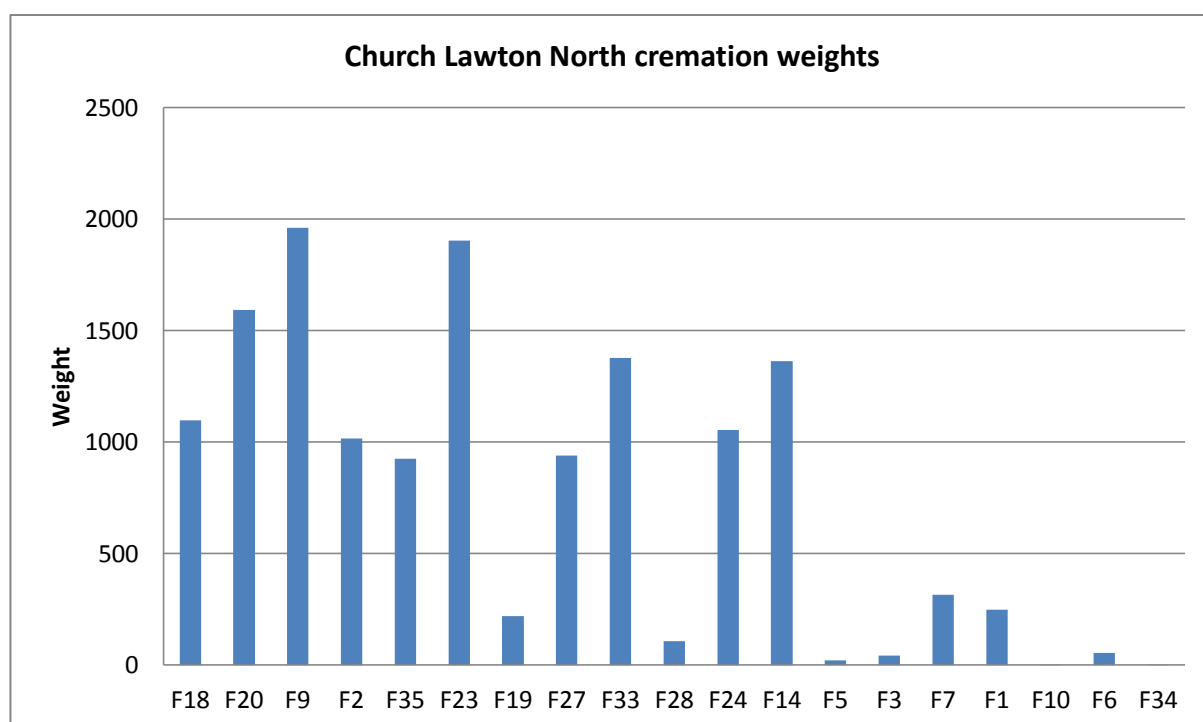


Figure 85: Chart of cremation weights for each deposit

Eight of the 19 cremation deposits weigh over 1kg, five of those with high weights have objects associated. F18 has an urn; F20 has flint, a bone pin, animal bone and a perforated axe; F9 was associated with flints; F14 was associated with a bone pin and animal bone; and F33 was associated with part of a flint blade/scrapper.

Some of the urned 'cremations' did not have any bone – including: F16 and F26, others only had a tiny amount of bone, F3 (42g), F34 (2g), F6 (53.3g), F10 (0.4g), F5 (20.5g) but were all un-urned. F9 has the highest weight but skeletally only represents one individual.

The colouration of the Church Lawton remains is mainly in the white/cream/tan range. According to Brickley and McKinley (2004) this indicates a temperature of >c. 600°C,

whereas any remains which are blue-grey (indicates incomplete oxidation) are indicative of a temperature up to c.600°C. The remains at this site have been quite efficiently and completely burned. The high weights of around half of the deposits indicate that most of the remains were collected for burial; this would have been a time consuming process whether the remains were picked out by hand or scooped up with a tool.

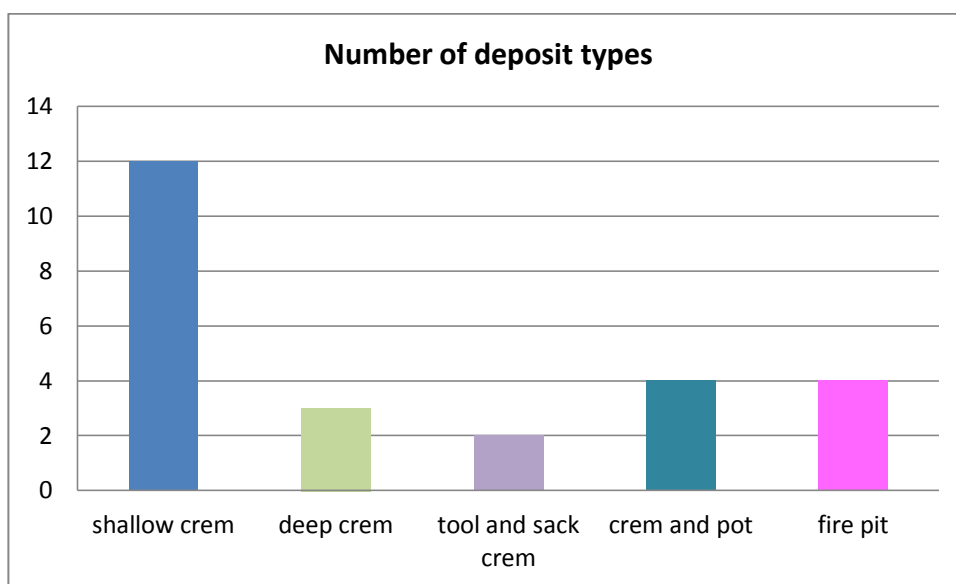


Figure 86: Chart demonstrating the number of cremation deposit types.

McNeil (Archive – site notes) identified five different types of deposits at Church Lawton North, all of which were cremations or associated with cremations. The number of each type of deposit is shown in figure 86 (above).

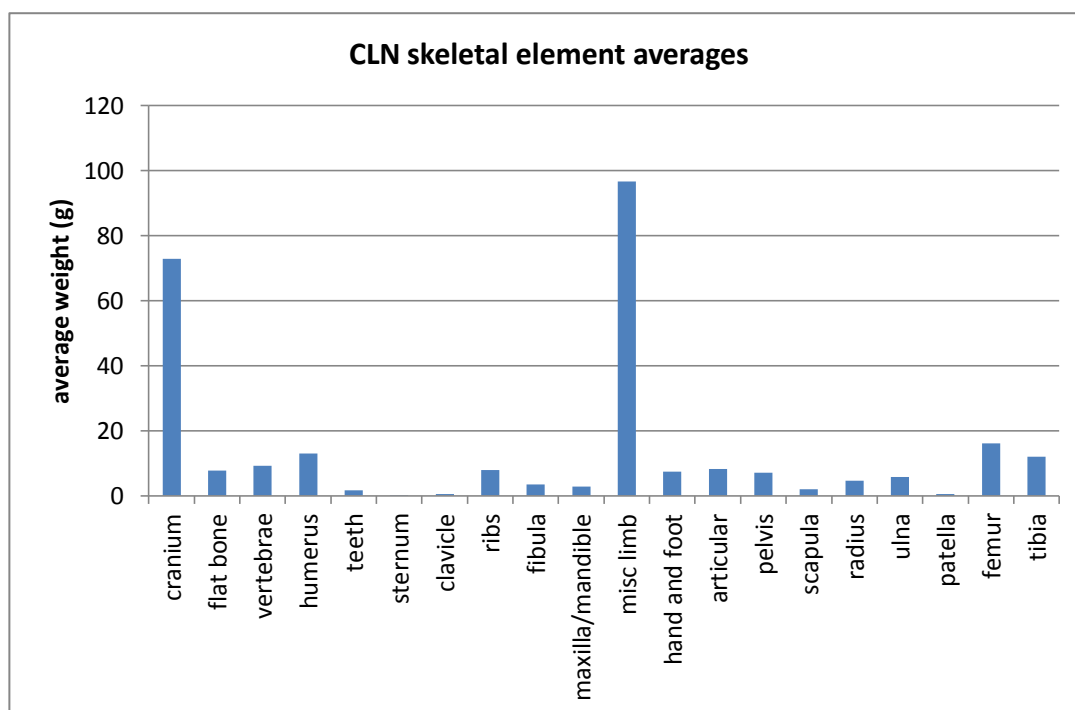


Figure 87: Average weights of skeletal elements identified in the Church Lawton North assemblages.

Of the skeletal elements identified (refer to figure 87) there are some high weights of cranium in some of the deposits from this site.

The majority of the cremation deposits are single burials, five of the deposits contained two individuals (F35, F23, F33, F28 and F24). Of these, three were adult females (one young adult, one middle adult and one older adult) who were buried with the remains of juveniles (one of these juveniles was at adolescent skeletal age). The other two deposits were one adult male of middle age with an individual of unidentified age and sex, and an adult with an older child.

Of the four high weight deposits which have an MNI of 1, two of these were adult males; F9 a young-mid aged adult and F2 an old age adult. The third was an adult of middle age. Lastly F20 was the remains of an adult possible female at middle age.

#### 11.2.6 Objects

Artefacts which have been discovered during the osteological analysis include small fragments of bone pin (F14, F1, possibly F20), burnt flint (F33 and possibly F20, F14). Small fragments of shell and a tiny speck of copper were found within F18. The lithics which were found are a dull grey-white in colour and have fractures and shiny areas

from heat alteration. The flint from F33 is definitely a worked piece of burnt flint which would have shown considerable re-touch prior to cremation. It seems to have been a flat knife of oval or circular shape (Cummings Pers. Comm.) or a scraper (Bayer Pers. Comm.). In the F20 deposit were two lithic fragments, one of which may be part of a blade.

Cremation deposits	Artefacts found in excavation	Artefacts found during analysis
F18	Urn	Shell fragments, speck of Cu
F2	0	0
F20	flint, bone pin, animal bone, perforated axe	Possible bone pin, animal bone
F35	0	0
F9	flint and flint knife	0
F23	0	0
F19	base of urn	0
F14	0	Piece bone pin, animal bone
F1	0	Piece bone pin
F33	0	Possible part flint blade (burnt)
F27	0	0
F28	0	0
F24	0	0
F5 (also fire pit)	0	0
F3	In urn/with pottery?	0
F7	0	0
F10	0	0
F6	0	0
F34	0	0

Table 47: Artefacts recovered from cremation contexts during excavation and recent analysis.

#### 11.2.7 *Charcoal*

A basic identification of a few charcoal specimens from the cremation deposits was carried out. Charcoal from deposit F14 included oak, ash and possibly beech and hornbeam. Oak is thought to have been commonly used within Bronze Age cremation pyres (Ashbee 1960, 38).

#### 11.2.8 *Cremation slag*

Originally Wells (1960) discussed a substance found within Anglo-Saxon cremations which he thought to be the remains of cremated human hair. The same type of substance has also been found in some Bronze Age and Roman burials (Henderson et

al. 1987a). Previous studies demonstrated using XRD and XRF analyses that cremation slag is derived from silica-bearing sandy soils fused with materials from the cremation pyre including plant remains, parts of metal work and tiny pieces of bone (Henderson et al. 1987b). Sandy soils seem to be the important contributor to this material as a similar substance, cremation 'cramp' found in cremations in Orkney is also constituted from the silica bearing soils (Photos-Jones et al. 2007).

Within this project cremation slag has only been found within the cremation deposits from Church Lawton North. The amounts of cremation slag range from 0.81g to 8.01g. Both F9 and F20 have cremation slag and were both 'sack and tool' type cremation deposits. Also F18 has cremation slag, this is an urned cremation; all three of these deposits are of high weight.

Non-destructive XRF (X-Ray Fluorescence) analysis of the cremation slag from three different deposits demonstrated consistent levels of silicon, phosphorus, calcium, magnesium and iron within all the samples. These are all important elements which occurred in the study by Henderson et al (1987a, b).

Further questions which arise would need further comparison with a larger data set from different sites. Cremation slag has not often been discussed within the cremation literature; it is not clear whether this is due to a lack of awareness of the substance or if it is rare.

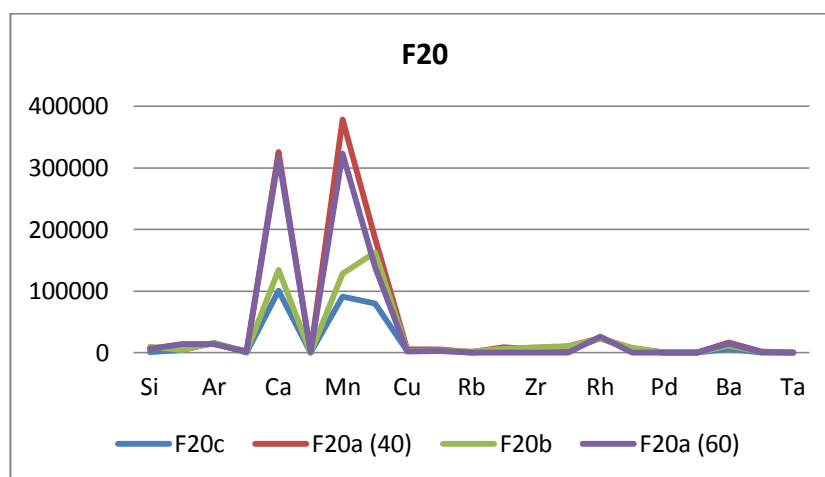


Figure 88: Plot of XRF counts of four samples of cremation slag from F20

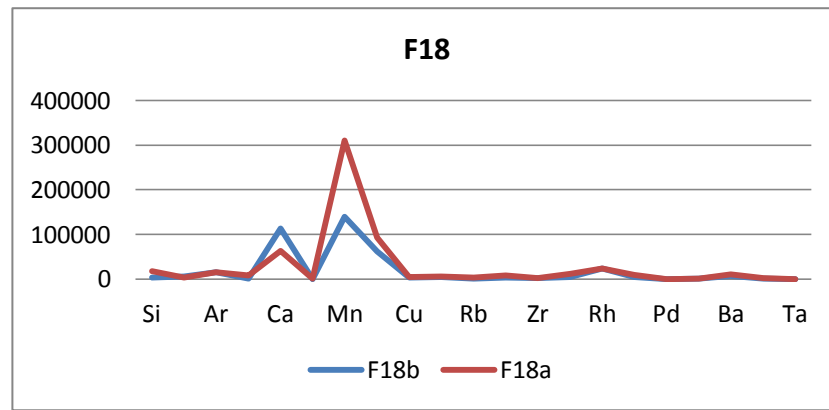


Figure 89: Plot of XRF counts of two samples of cremation slag from F18

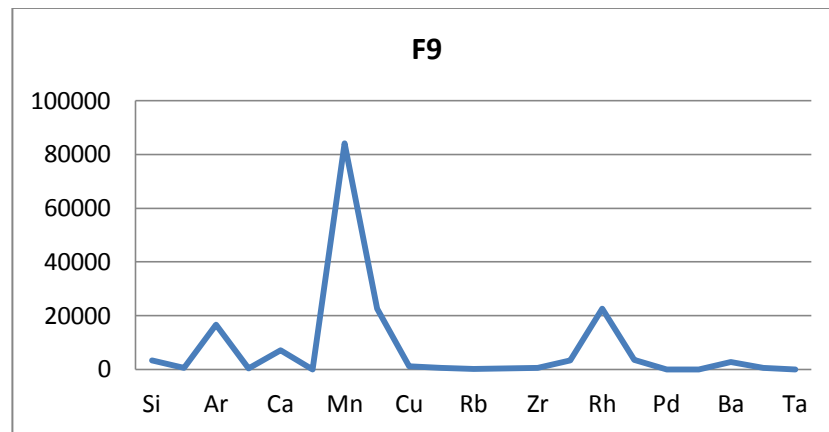


Figure 90: Plot of XRF counts of a sample of cremation slag from F9

#### 11.2.9 Chronology

The stratigraphic relationships of the site indicate that there were two or three main phases of construction and use. The ditch represents the earliest activity and was associated with beaker fragments; after the ditch had been left to slump for a while the first phase barrow was constructed. The early barrow had a central pit where there may have been an inhumation. Some of the cremations also were associated with this phase.

The second phase of the barrow led to the elaboration of the barrow. A number of cremations were dug into the mound and fire pits were also part of this phase.

Previous radiocarbon dates obtained by McNeil in 1983 were from charcoal samples which gave wide ranging dates. These dates were for six contexts at Church Lawton North and two dates for the pre-barrow surface and the mortuary house at Church Lawton South.

Date	Context	Years BP	Cal BC	%
CLS pre barrow	Phase 1	4100 ±160	3093-2200	95.4
CLS mort house	F12	3600 ±100	2275-1691	95.4
CLN fire pit	Phase 2 F5	3400 ±80	1896-1505	95.4
CLN fire pit 2	Phase 2 F11	3300 ±80	1767-1416	95.4
CLN burial lid	F12	3490 ±80	2027-1621	95.4
CLN pre phase 1 ditch	F13	3560 ±80	2136-1692	95.4
CLN in acc urn	Phase 1 F16	3500 ±100	2132-1537	95.4
CLN pit acc urn	F26	3500 ±80	2032-1625	95.4

Table 48: Harwell radiocarbon dates obtained in the 1980s for Church Lawton

Within this study, of the 19 cremation deposits five were selected for radiocarbon dating, F9 from the central area of the barrow, and F24, 20, 19 and 14 from the outer areas of the site. These dates show an early date for cremation deposit F9 and a later phase for F24, 20, 19 and 14.

Despite the wide ranges for the previous dating programme it seems likely that the mortuary house at Church Lawton South was contemporary with F9 at Church Lawton North.

Date ref	Burial	Years BP	Dates cal BC	%
OxA-26843	F9	3620 ±28	2115-1896	95.4
OxA-26842	F24	3495 ±29	1897-1741	95.4
OxA-26841	F20	3490 ±29	1893-1740	95.4
OxA-27096	F19	3486 ±26	1887-1744	95.4
OxA-26840	F14	3462 ±33	1883-1691	95.4

Table 41: Radiocarbon dates (2012) for Church Lawton North

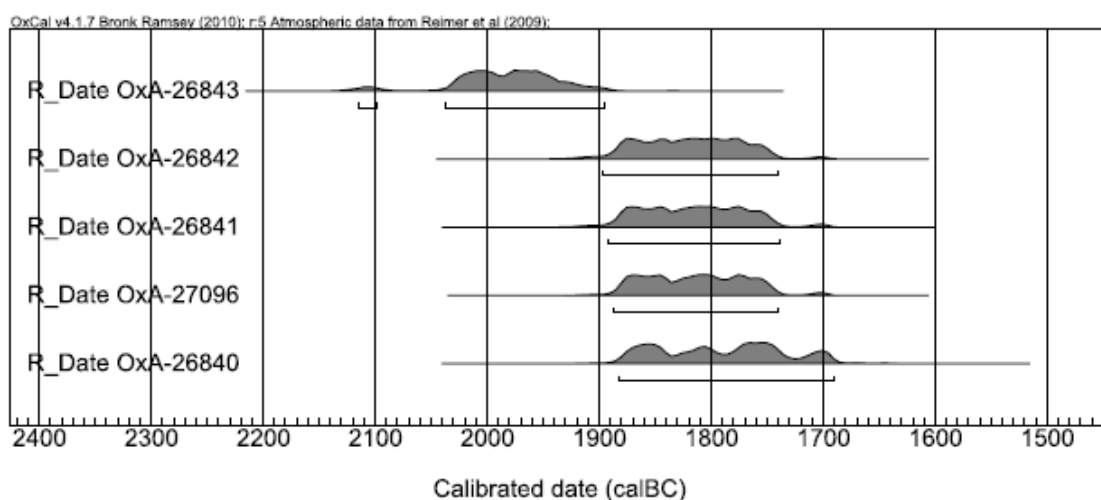


Figure 91: Radiocarbon dates (2012) from Church Lawton North

#### 11.2.10 *Burial process and sequence*

At Church Lawton North a ditch was created, this was left long enough to be silted up before the primary mound was built. This was then followed by the excavation of a pit, possibly for an inhumation burial which was accompanied by a beaker; the pit was covered over with a piece of wood. Pits were then dug for the insertion of cremated remains.

The earliest dated burial at 2115-1896 cal BC was F9. These were the remains of a male of young to middle adult age. He was associated with a flint knife and other flint fragments which had also been through the pyre. A pit was dug for the deposition of this young male; this was in the centre of the barrow, near the pit which may have contained an inhumation. These remains were packed well in a way which suggests they were placed in an organic bag, perhaps leather, before being deposited into the pit.



Figure 92: Photo of F9 in situ, courtesy of Grosvenor museum

Of the burials which were not radiocarbon dated, F35, F3 and F1 were also from the central area of the barrow and it is likely that these are also early in date. Pit F1 only contained a small amount of bone which is the remains of an adult individual. A bone pin was also included with the cremated remains. F3 is such a small deposit that it is not very informative, but this deposit was within an urn.

F35 contained the remains of two individuals, an older adult female and a child but there were no grave-goods within the deposit.

Later, the mound was enlarged using more sand which was covered in turf, further cremation deposits were dug into the mound. In the east of the barrow three pits



were created, stakes were inserted into the sides and bases of these pits. These pits were used for burning and this left charcoal and small amounts of cremated bone behind.

It is possible that Church Lawton South barrow was created and used at the same time as these events. A structure was built out of turf and daub; this structure may have been used for part of the burial process. A stone circle of boulders was erected around the barrow. Within the structure, a fragment of cremated bone was left behind, the sorting of the cremated bone may have occurred in the structure.

The next burial within the dated sequence at Church Lawton North was F24 which dates to 1897-1741 cal BC. This deposit contains the remains of two individuals; an adult and an older child or young adolescent. There were no objects associated with these individuals.

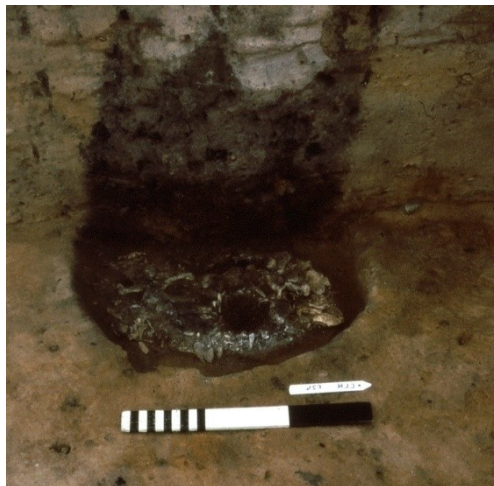


Figure 93: Photo of F24 during excavation courtesy of Grosvenor Museum.

At around the same time (1893-1740 cal BC) the remains in context F20 were cremated. These remains are of an adult possible female of middle adult age. This individual had developed extra bone to the finger bones perhaps due to age or activity. After death the woman was placed on the pyre, a number of objects were placed into the pyre with her. This woman was accompanied with a flint, bone pin, animal bone and a perforated stone axe, all of which showed signs of heat alteration. After the completion of the pyre when the remains had cooled enough to be handled, the cremated bones and the associated objects were collected together and placed into the pit.

This was one of the largest deposits of cremated bone at this site and may reflect high status or other cultural need to gather up a large amount of the cremated remains. The assemblage is unusual in the number and range of grave-goods with this individual.



Figure 94: photo of F20 during excavation, courtesy of Grosvenor Museum

The next dated deposit is F19 which dates to 1887-1744 cal BC. These were the remains of an adult individual of unknown sex. This was only a small deposit of bone. The remains were placed in an urn in a pit which also appears to have been used as a 'fire pit'. This was the most liminal deposit of those dated.

The last dated deposit of cremated bone is that of F14 which dates to around 1883-1691 cal BC. This deposit contained the cremated remains of an adult in the 30s or 40s. During the cremation of this adult a bone pin and some animal bone were also included in the pyre before the remains were gathered and placed into the pit.

F18 was in the south of the main barrow area and was the remains of a middle to old age adult male. This is one of the larger cremation deposits and was deposited within an urn. Also associated with this individual were pieces of shell.



Figure 95: Photo of F18 in situ courtesy of Grosvenor Museum.

Later cremation deposits are likely to include those which are on the outside of the ditch; F5, F7, F10/11, F6, F33, and F34. Most of these liminal burials only contained very small amounts of cremated bone which does not reveal much about these individuals. However, F33 which was just on the inside of the ditch contained the remains of an adult female aged in the 30-40s and a young child. Within this deposit was also part of a possible flint blade which had been damaged by the pyre process. Deposits F27 and F28 were like F24 (see above) in the North-East quadrant of the barrow near to the ditch. Of these three deposits, F28 and F24 both contained an adult and adolescent and, F28 contained the remains of one adolescent.

#### 11.2.11 Discussion

The round barrows of Church Lawton show possible contemporary use of the two surviving sites which would have made a small mortuary complex. It seems likely that part of the mortuary process was occurring at the south barrow before the remains were deposited in the north site. The mortuary process may also have included the use of the 'fire pits' where some burning has occurred, during this burning process, remnants of bone were left behind. The fire pits may have been used for further mixing, sorting or cleansing of the bones. Comparable practices might be seen at Bleasdale, Lancashire; Blawearie, Northumberland, and at Carneddau, North Wales (Varley 1938; Hewitt and Beckinsall 1996; Gibson 2007, 58).

The cremation deposit near the centre of the north barrow has an earlier date than the others which were dated in different areas of the site. The north barrow does follow a pattern of earlier burial being central within the site with later ones circling around the centre. The north-east area of the barrow near the ditch appears to have been a focus for the burial of adolescent individuals. The burials at the edges of the site unfortunately are less well preserved so patterns in these burials cannot be seen.

Even though Bronze Age cremations of high weight are supposed to be rare (McKinley 1997) seven out of 19 deposits at Church Lawton North weigh over 1000g. This indicates a lengthy time taken for the collection of the remains for these burials as part of an elaborate burial process.

Overall there are even numbers of adult males and females but only the adult females are associated with juveniles at this site. This hints at a linked identity of mother and child at Church Lawton North.

Burial F20 was unusual in the range of objects associated with it. These objects all showed signs of being through the pyre; these objects may have been to do with various aspects of the individual including belongings, group affiliations and food offerings.

The evidence for lengthy burial rites points towards the importance of the mortuary ritual at Church Lawton; time was taken for multiple stages of the rite through pyre building, cremation, collection of the remains and pyre-goods, use of the fire pits, and lastly the burial of the remains. The burial deposits appear to have been through a strongly ritualised process.

### 11.3 Whitelow Cairn, Lancashire

#### 11.3.1 *Introduction*

Whitelow Cairn, near Ramsbottom, Greater Manchester was excavated by Norman Tyson and Bury Archaeological Group from 1960 to 1962. The site is a ring cairn with an inner cairn, which may have later been elaborated with more cairn material. Thirteen cremation deposits were found which resulted in an MNI (Minimum Number of Individuals) of 13 individuals; artefacts included: two clay studs, a bronze awl, five pots and various flint and chert artefacts.

#### 11.3.2 *Background*

Prior to excavation, Whitelow cairn appeared to be a round cairn c. 25m in diameter, with some areas which were more defined. The site was fully excavated prior to the proposed erection of a television mast, which did not go ahead. A layer of stones and soil up to 0.45m deep covered most of the interior construction, a stone layer had probably originally been part of the structure, but on excavation some of this had been spread from other features. During excavation (Tyson 1994) an oval cairn bank was revealed, within which was a central cairn and an arc of boulders. Whitelow cairn had been damaged by a stone-lined kiln outside the northwest bank; some cairn material had been used in its construction and had been removed from the north-east and south-east quadrants. Before construction of the enclosing bank a grit slab 0.6m square had been placed at right angles in front of the erratic, the space in-between contained charcoal scatter. The outer ring cairn was built of grit-stones which were well packed; the majority of this structure was 2m wide and 0.3m in height.

Tyson (1994) also discusses fire pits, these were 10 small pits which contained charcoal and were on average 20cm in depth and diameter. The pits were found in various parts of the cairn; from pit three a charcoal filled gully extended to around 0.45m long; the surrounding surfaces of this feature showed signs of burning. These fire pits do not seem to resemble the 'fire pits' discussed at Church Lawton (McNeil 1982).

Ring cairns are thought to be common within upland areas of England and are also well distributed in Scotland and Wales. Examples which are local to the area include Cheetham Close (where there were at least two); Moseley Height; Jepson's Gate; Hell Clough 1, 2 and 3, and Noon Hill (in one of its phases). These cairns are at times

categorised as 'ring-works', which also include small stone circles, kerbed cairns, and earth bank circles. All of these types, in some cases may also have a smaller central cairn as at Whitelow (Barrowclough 2008, 119). The Cheetham Close ring cairn appears very similar to that at Whitelow, with an outer bank and a smaller cairn within this (Fletcher 1985). Half a mile north of Whitelow was Bank Lane (Shuttleworth) cairn; this site had an empty cist (probably for an inhumation which did not survive the soil conditions), three cremations, a food vessel and a faience bead (Tyson 1984).

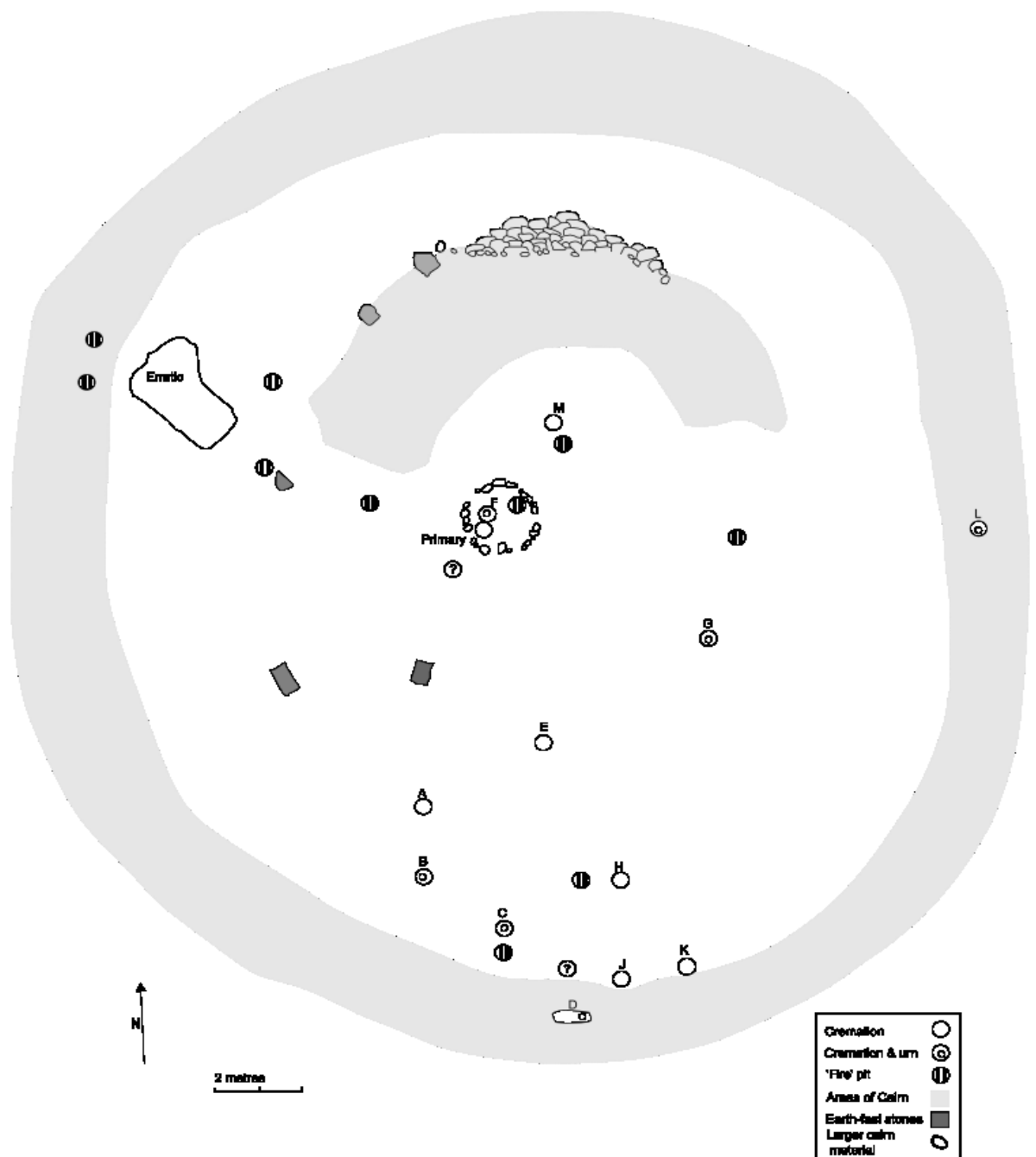


Figure 96: plan of Whitelow cairn (after Tyson 1994)

### 11.3.3 *Osteological summary*

The human remains were originally partly examined by Dr. E. L. Patterson, but when the bone assemblage was later sent away for detailed analysis, it never arrived. The remains were more recently re-discovered by English Heritage and re-accessioned to Bury Museum and Art Gallery.

The analysis of the cremated remains from Whitelow cairn indicates a minimum of 13 individuals of which two are probably male and four are probably female, it was not possible to estimate the sex of the rest of the adults. The majority of the individuals (seven) are adults; there was also one child, one older child or adolescent and one definite adolescent, it was not possible to age three of the adult individuals. There was no evidence for any palaeopathology within the assemblage (see appendix 17.8).

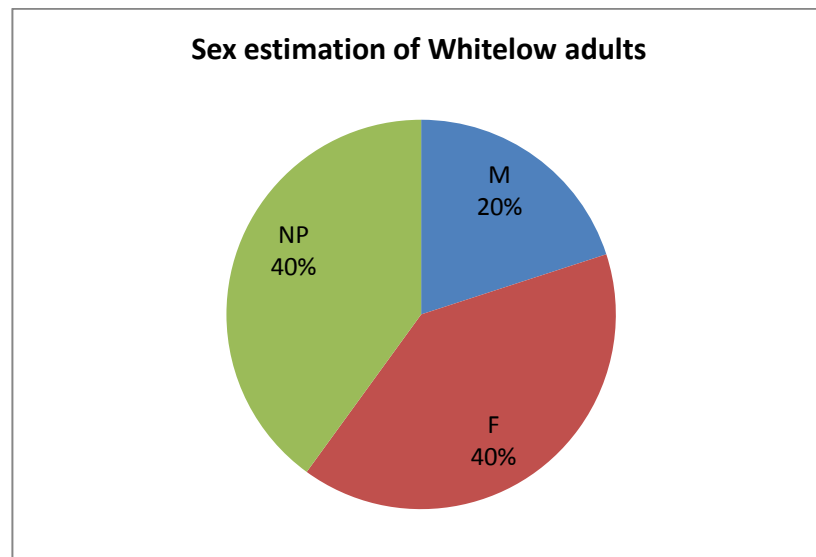


Figure 97: Percentage of male and female adults identified from the Whitelow assemblage.

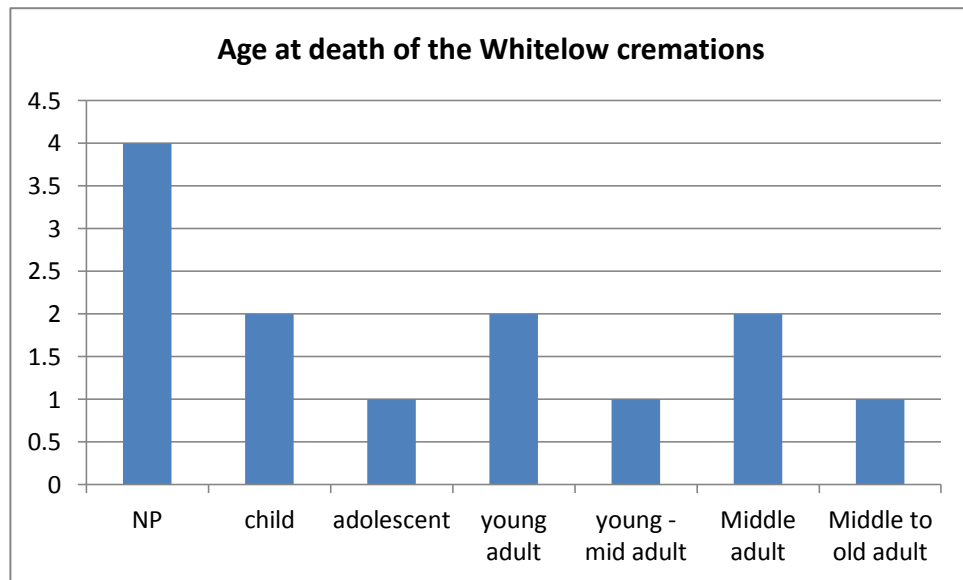


Figure 98: Number of individuals in age groups from the Whitelaw assemblage

The assemblage includes individuals of a range of ages from children to older adults; the assemblage did not include any infants.

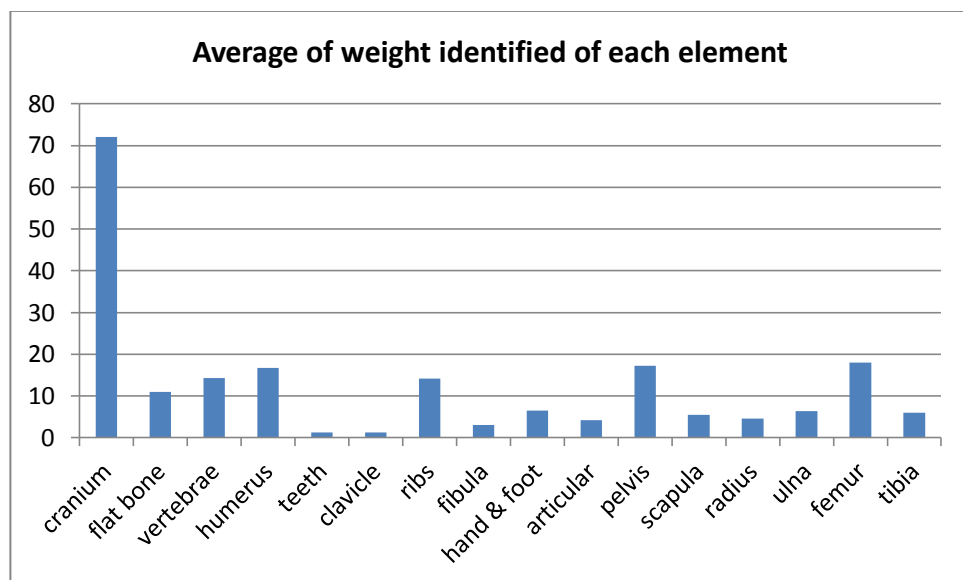


Figure 99: average weights of elements identified from Whitelaw

Of the elements identified from the Whitelaw remains, the cranium gives the highest amount by far. This may indicate that the head was gathered preferentially as a more recognisable part of a person.

The majority of the remains are white to cream in colour which indicates that the remains were cremated at 600°C and above (Brickley and McKinley 2004, 11) or even 800°C and above (Walker et al. 2008). Some of the deposits had charcoal and soil



extremely embedded with the bone which might mean that the remains were gathered up through scooping perhaps with a shovel as opposed to hand-picking out bones.

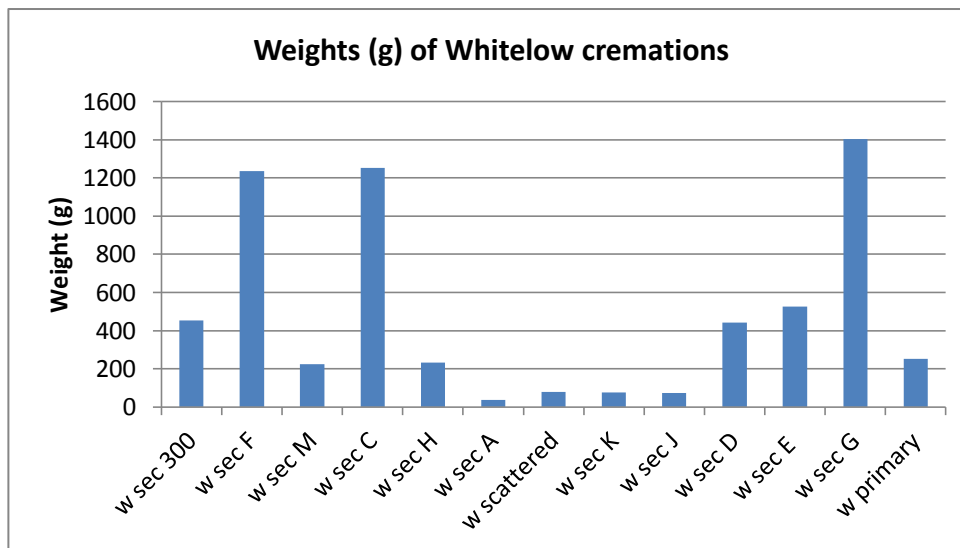


Figure 100: The weights(g) of the Whitelaw cremations

It has been argued within the literature that it is rare for a Bronze Age cremation deposit to represent a complete body, but there is always a percentage of the remains which remain unidentified through analysis. McKinley (1997, 130) discusses how it would have been rare for the entirety of a cremation to be collected for burial. McKinley (1993) also relates the weight of a cremation to the deceased's status; a complete cremation (using modern data) would average around 1600g. The examples of high status cremations cited by McKinley (1997) in Bronze Age burial mounds were all primary or central cremations. Other past studies have used artefacts as an indication of status (Shennan 1978); status might mean different things when examining different kinds of evidence. Cremation weight could indicate a different kind of status where there is a need to bury as complete a person as possible. It could also be to do with whether the remains were cremated nearby or had been kept/curated for a while.

#### 11.3.4 Cremation weight and artefacts

Whitelaw primary cremation only has a low amount of surviving bone (252g) but was associated with seven objects: five fish vertebrae, a calcined flint and a bronze awl. The primary cremation interestingly, was mostly comprised of cranial fragments (52%

of identified remains). Whereas Whitelow cremation G has a large amount of bone (1404g) which is closer to the estimated amount for an individual but was accompanied by only one urn and one flint flake (Tyson 1994). Secondary cremations F and C also had quite large amounts of bone, there were no artefacts associated with cremation F except the urn this deposit was within (see appendices 16.3 and 16.3.2). It seems that artefacts or weight may have bearing on status in cremated remains.

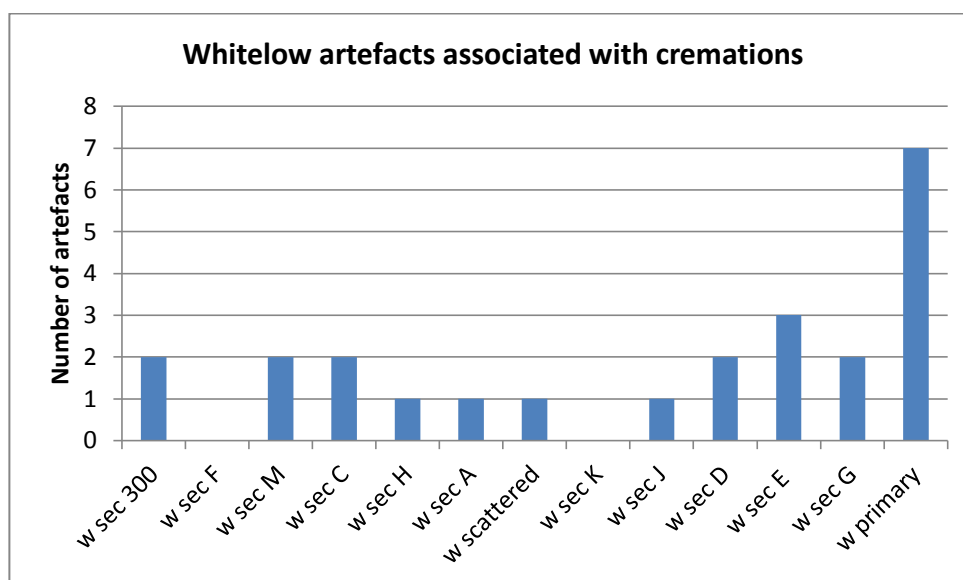


Figure 101: Number of artefacts associated with each cremation.

During the analysis of cremation E, pieces of bone pin and some flints were found. Discovered with two of the cremations at Whitelow were clay studs; one complete and one partial. These were associated with cremations E and H. Studs have also been found made of shale, jet and amber; locally a clay stud was found at Woodhouse end, Cheshire (Ashbee 1960, 110; Rowley 1974, 22). Often when we discuss past people, their appearance is not considered; appearance may have had strong cultural meanings which spoke volumes on group affiliations and kinship for example.

Whitelow	Weight	Pottery	Other objects	Total objects
Cremation L	454	1	1	2
Cremation F	1237	1	0	0
Cremation M	224	0	2	2
Cremation C	1252	1	1	2
Cremation H	232	0	1	1
Cremation A	38	0	1	1
Scattered	80	1	0	1
Cremation K	76	0	0	0

Cremation J	73	0	1	1
Cremation D	443	2	0	2
Cremation E	527	0	3	3
Cremation G	1404	1	1	2
Primary	252	0	7	7

Table 50: Comparison of cremation weights and artefacts at Whitelow

Only the primary cremation seems to have an inverse relationship between the amount of bone and the number of associated artefacts. The other deposits almost all have at least one grave-good and of those deposits without, cremation F has a high weight and Cremation K is a low weight. So there appears to be no clear correlation with bone weight and artefacts. While is no clear pattern of burials with both weight and artefacts, each separately may have different meaning; each may have tied to a different kind of ‘status’ or another aspect of identity.



Figure 102: Collared urn and accessory vessel from Whitelow.

### 11.3.5 Chronology

As part of the post-excavation work on the site Tyson submitted two charcoal samples for radiocarbon dating in 1989 (refer to table 51). The charcoal was from cremations H and G and demonstrated that cremation H was earlier in the sequence. More recently Barrowclough (2008) obtained three more dates, sampling more charcoal from cremations H and G, and also some cremated bone from cremation L (refer to table 52). The charcoal samples were of *Quercus* (Oak).

The dates obtained by Barrowclough give later dates, but are likely to be more reliable due to improvements in the technology.

Burial	BP	Cal BC	%
H	3635 ± 20	2121-1938	95.4
G	3595 ± 20	2022- 1892	95.4

Table 51: Radiocarbon dates obtained by Tyson

Date	Burial	Sample	BP	Cal BC	%
SUERC -4456	H	Quercus, charcoal	3515 ± 35	1940-1730	95.4
SUERC -4457	G	Quercus, charcoal	3470 ± 40	1890-1680	95.4
SUERC -4455	L	Cremated bone	3495 ± 40	1920- 1730	95.4

Table 52: Radiocarbon dates from Whitelaw Cairn from Barrowclough (2008).

Five of the Whitelaw cremation deposits were radiocarbon dated to test whether the site follows a typical sequence developing from the ‘primary’ cremations in the centre of the cairn and the length of time the site was used. This is particularly important due to both the rarity of preserved Early Bronze Age remains in Lancashire and also possible differences in site types, as this is a flat cairn as opposed to a barrow.

Number	Context	Date BP	Cal BC 95%
OxA-26844	Cremation F	3599 ± 28	2027-1891
OxA-26849	Primary cremation	3555 ± 28	2010-1776
OxA-26846	Cremation C	3527 ± 28	1938-1760
OxA-26845	Cremation C	3499 ± 34	1919-1740
OxA-26848	Cremation D	3503 ± 27	1900-1746
OxA-26847	Cremation G	3496 ± 28	1895-1743

Table 53: Results of the 2012 radiocarbon dates of five cremation deposits from Whitelaw.

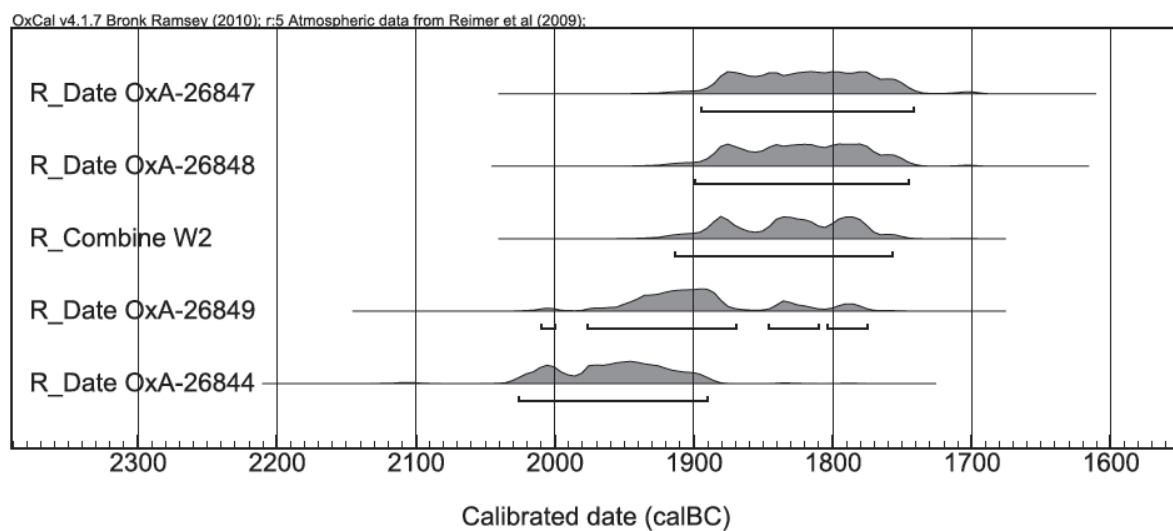


Figure 103: Dates of Whitelow cairn including combined dates of cremation C.

Date	Burial	Un-modelled	%	Modelled	%
<b>Phase 2</b>					
SUERC-4455	Cremation L	1923-1695	95.4	1887-1768	95.4
OxA-26847	Cremation G	1895-1743	95.4	1885-1770	95.4
SUERC-4456	H (Charcoal)	1936-1746	95.4	1889-1770	95.4
OxA-26848	Cremation D	1900-1746	95.4	1886-1771	95.4
Combine W2	Cremation C	1914-1757	95.4	1889-1772	95.4
<b>Phase 1</b>					
OxA-26849	Primary	2010-1776	95.4	2013-1781	95.3
OxA-26844	Cremation F	2027-1891	95.4	2021-1888	95.4

Table 54: Un-modelled and modelled dates including two dates from Barrowclough (2008).

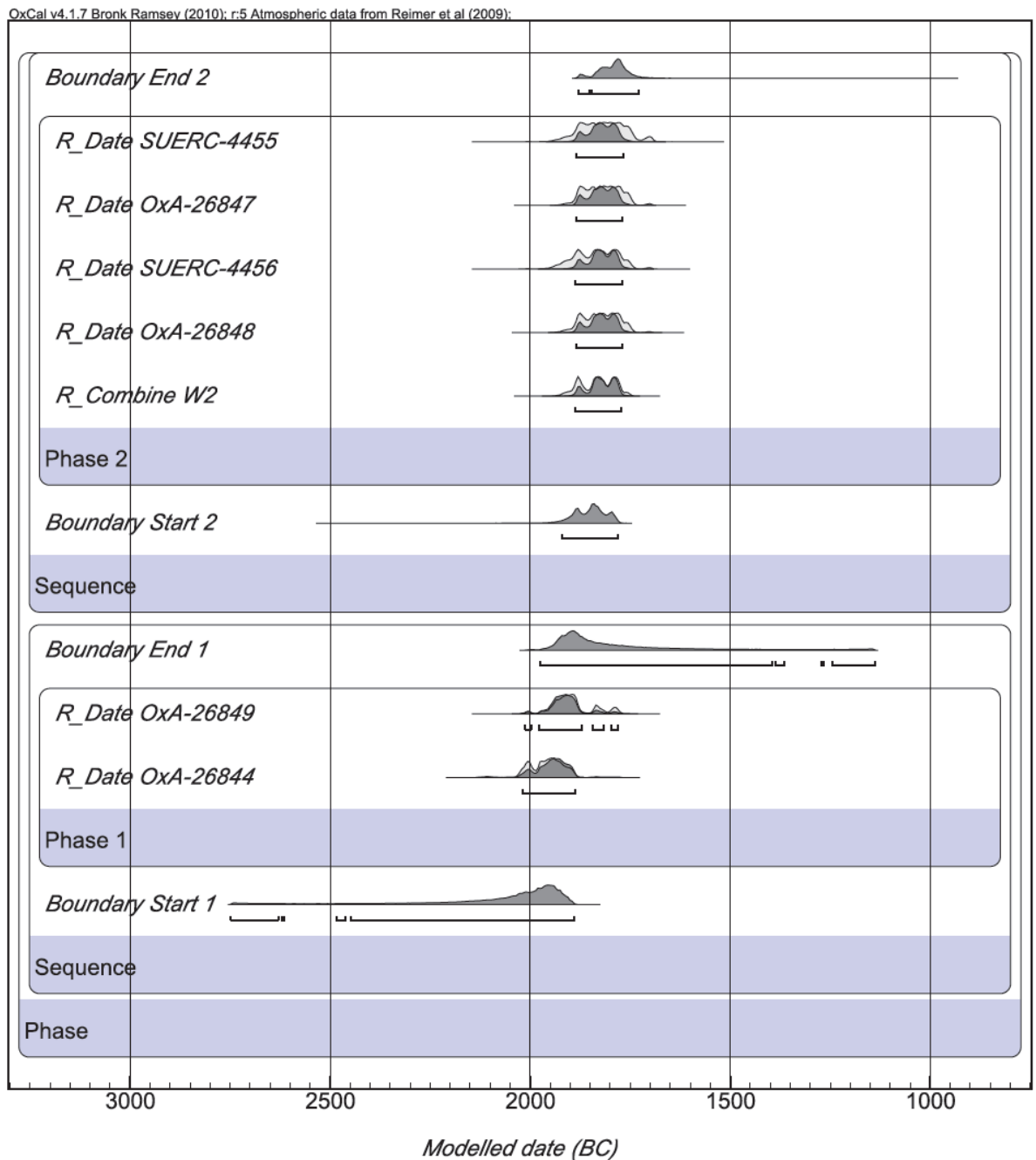


Figure 104: Modelled dates of cremations from Whitelow

According to Garwood (2007, 36) 'open' sites such as flat cairns and ring cairns with human remains date to c.2000-1500BC and have rarely been dated. Garwood also argues that such sites were used for ceremonies. The radiocarbon dates for Whitelow do fit into this time-frame. Other similar dated sites in the region include Bleasdale, Astley Hall, Moseley Height and, Shuttleworth cairn (Barrowclough 2008, 229).

### 11.3.6 *Process and burial sequence*

The earliest radiocarbon dates for Whitelaw are from cremation deposits within the central cairn within the overall structure. The central cairn was around 1.22m west of the true centre, it was circular and 1.84m in diameter and 0.30m in height; this cairn covered and enclosed two cremations, the primary cremation and cremation F. Presumably the central cairn was constructed around the time of these burials which are the earliest in the sequence.

Cremation F was the earliest dated burial at 2027-1891 cal BC; this individual was buried within a collared urn which was placed inverted in a pit 36cm in depth and diameter. The remains are an adolescent and not possible to assess for sex. This was a large deposit at 1237g.

The primary cremation burial was in a circular pit, c.38cm in diameter and 30cm deep. This individual was next in the sequence and dates to 2010-1776 cal BC. This was an adult female of middle adult age. After this individual was cremated, only a small amount of bone (mostly cranium) was collected for the burial (252g). This individual was associated with a bronze awl, five fish vertebrae and some flint. It is not clear from the analysis of the bronze awl (Tyson 1994) whether it was burnt or not. But it does not show changes which would have resulted from the full heat of the pyre. Both of these deposits within the central cairn were covered over with stone slabs which also showed signs of burning.

The central cairn was enclosed on its north edge by a semi-circular bank, 2m in width. Tyson (1994) also describes a 'terrace' which forms the northern part of the inner bank; it was an area of flat stones of 4.5m. This may have been a more 'kerbed' edge of the inner bank.

There were also two small rectangular standing stones in the south west quadrant, the bases of which were well packed with small stones. Within the inner bank also were three irregularly shaped 'earth-fast' boulders which defined the north-west perimeter of the cairn. In the north-west enclosing bank was a large grit-stone erratic which measured 2.13m by 1.22m and was 0.6m in thickness.

The rest of the dated cremation deposits form a second phase of burials, these are all from the south half of the inner cairn and in the south half of the outer cairn bank.

Cremation C dates to 1914-1757 cal BC; these are the remains of a probable female adult and was another large deposit of bone at 1252g. After this woman was cremated the remains were gathered and were buried in the inner section of the main cairn within a collared urn which was inverted and placed into a pit. This individual was also accompanied by a chert knife which according to Tyson (1994) had been deliberately broken.

Cremation D dates from 1900-1746 cal BC; this individual was an older child or adolescent. This deposit at 443g was only small due to the age of this individual. The remains of this individual were interred within the outer cairn ring and were also placed within an inverted collared urn.

Cremation G is another deposit from the main body of the cairn and is a probable young adult male and is one of the latest dated deposits at 1895-1743 cal BC. This is the largest deposit from the site at 1404g. This individual was placed in an upright urn and was associated with burned flint and animal bones.

Cremation L (dated by Barrowclough 2008) has a similar date (when modelled) to that of Cremation G. These are the remains of a middle to older age male which were placed in a collared urn in a pit. A broken flint was also associated with this man and this cremation deposit was placed in the outer ring cairn like cremation D.

#### 11.3.7 Discussion

The cremation deposits within the central cairn may indicate some connection or memory with the primary cremation and cremation F placed close together. The number of fire pits at the site indicates a preference for burning events, whether such pits were burned in association with the deposition of the burials or for some other reason remains unclear. Other evidence for burning can be seen in the burnt stones which were placed over the burials of cremation F and the primary cremation which was perhaps another way of making a contained vessel for the deceased (See 10.5.3) The majority of cremation deposits are positioned in the southern half of the cairn, and there are more fire pits in the northern half, perhaps indicating some different uses of areas within the site.



While the burials began in the centre of the site, over time the burials moved outwards until only outer edges of the site were used for the burials of cremation deposits L and D within the mass of the ring-cairn. Perhaps over time the increasing number of burials made the site more inaccessible to the living.

There is a strong female identity at this site, which can be seen from the female deposits with artefacts. These objects relate to personal adornment (studs, bone pin), leatherworking (bronze awl) and water (fish vertebrae).

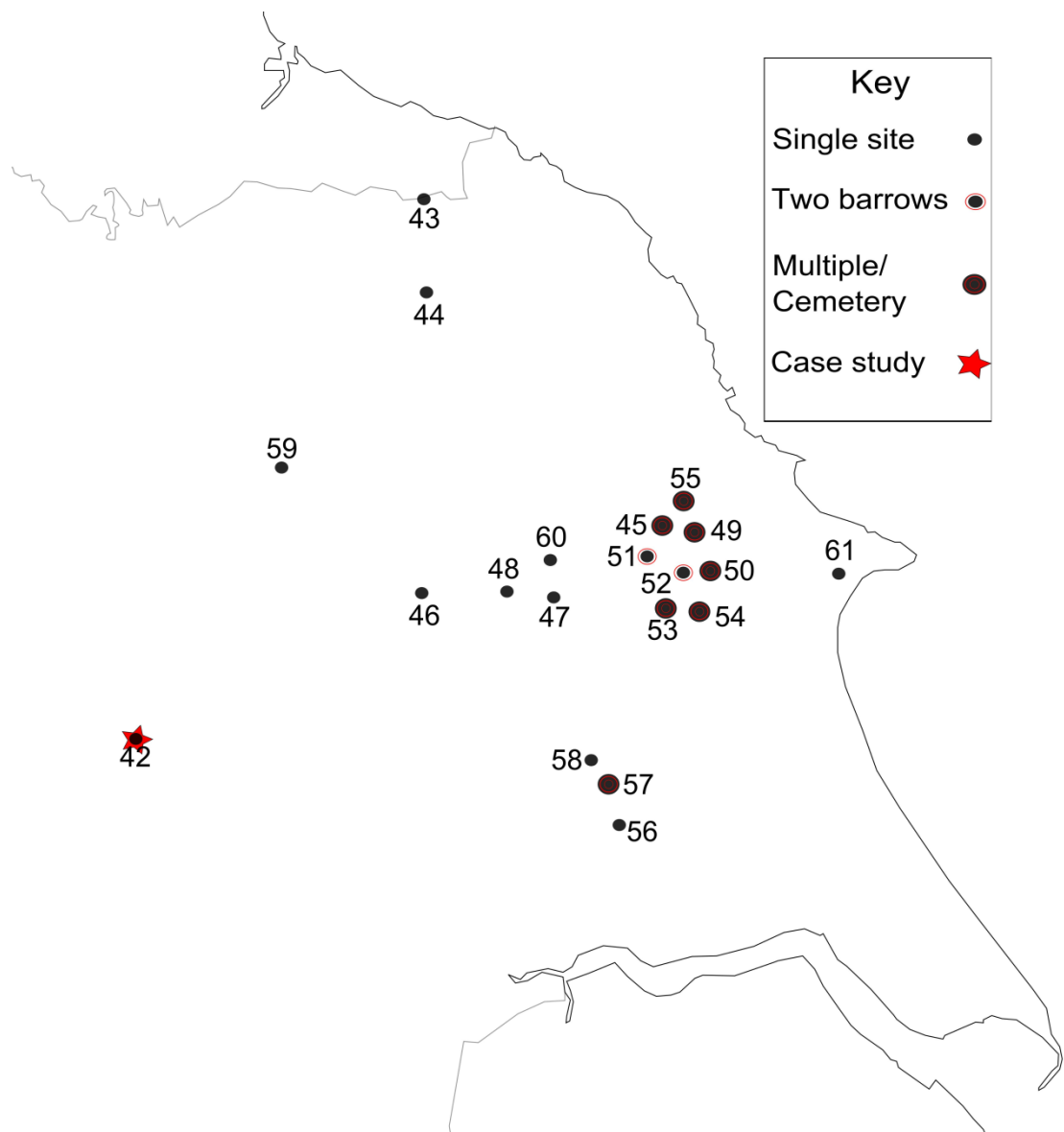
Like at Church Lawton, there was ritual burning taking place at this site which may relate to the burning seen in cremation and the transformative powers of fire. Through the fire, the body and associated objects are altered; the body is reduced into fragments, the objects may fracture and change colour. The parts of the body do not become objects of material culture (Williams 2004, 265) some parts of the body may still be recognisable as parts of a person, as evidenced by the greater amount of skull deposited in some of the burials discussed here.

Through cremation, the body is broken down and its ties to the living are also broken.

## 11.4 Green Howe round barrow, North Yorkshire

### 11.4.1 Introduction

Green Howe round barrow, in North Deighton, Yorkshire was excavated in 1938 by Mr B. Kent and published after his death by Wood (1972). Re-analysis of the human remains indicates a minimum of 14 individuals; these included individuals of a wide range of ages and both males and females. There were 11 inhumations and three cremations; the majority of the burials were buried near the centre of the barrow. The earliest activity at the site was represented by a hearth and some associated pottery and lithics. There were four pit graves with burials and four or five burials which were 'secondary'.



#### 11.4.2 *Background*

Green Howe was excavated some thirty years before publication, as this was interrupted by World War 2, during and after which some material may have been lost or destroyed. The burials of 14 individuals are discussed by Wood (1972), the human remains were previously analysed by Cave in 1939, Cave listed burials 1-12, but does not mention burials 13 and 14.

Other local barrows include: Ferry Fryston, Little Ouseburn and Quernhow. Quernhow was similar in construction with a cairn 'revetment', although only cremation burials were found (Waterman 1951).

The excavation revealed four grave-pits, only one of which appeared to have been re-used for further burials over a long period of time. Two of the grave-pits were capped with small mounds of turf, further burials were inserted into the central turf capping before the covering mound was built with an outer 'revetment' of stones. The mound covering grave 2 was in place before the final barrow was built, absence of weathering or build up of soil layers between may imply that the final barrow was constructed soon after the cluster of graves was complete. Wood (1972) assumes a short stage between this and the use of the main mound for the insertion of secondary burials. The barrow was constructed from the surrounding soil.



Figure 106: Photo of Green Howe during excavation (courtesy of Yorkshire Archaeological Society).

Around the outer edge of the barrow except for the south edge was a 'revetment' this was made of two courses of flat stones, sloping outwards; extra 'loose' smaller stones were placed against this to make a rough wall. The south part had a few large stones, which were widely spread along the edge of the barrow. There were three later burials which were dug into the barrow; these included one inhumation and two cremation deposits.

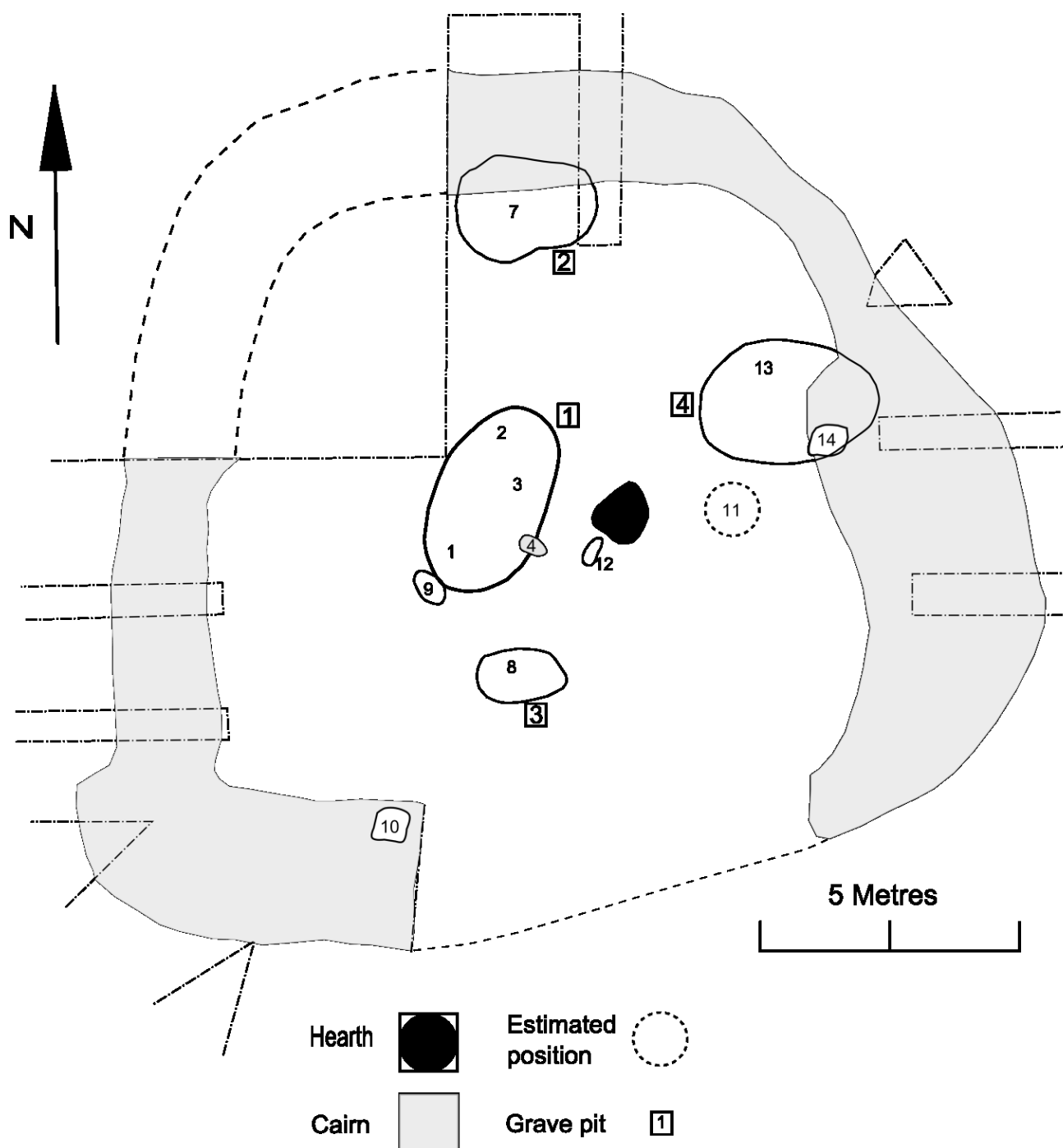


Figure 107: Plan of Green Howe round barrow after Wood (1972).

#### 11.4.3 Osteological summary

A total minimum of 14 individuals are represented in the assemblage; these include: two adult females, five adult males (one adolescent is probably male) and one cremated adult of unknown sex. The younger age groups include: two adolescents (one cremated), three children (one cremated), and also, one infant and one neonate. The remains varied in preservation, some were extremely well preserved and some had been varnished at some point which makes taphonomic processes difficult to ascertain (see appendices 16.2 and 17.11).

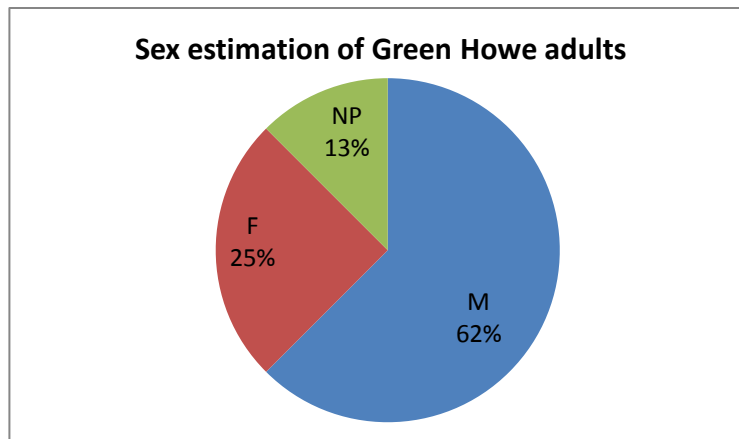


Figure 108: Percentage of male and female individuals at Greenhowe.

While all age groups are represented within the Green Howe assemblage, the majority of the adults at the site are young adult males. There were three very young adult males and two other males in the late twenties. There were only two adult females at this site; one an older adult and one aged 30-40.

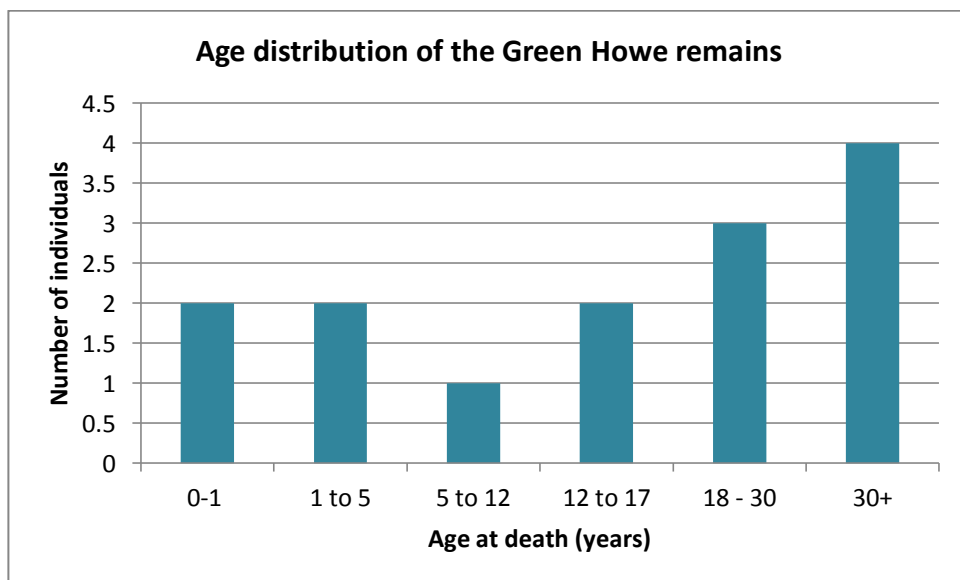


Figure 109: The number of individuals within age categories from Green Howe.

Green Howe cremations	Weight	MNI
Cremation (5)	569.5g	1
Cremation (10)	631g	1
Cremation (11)	905g	1

Table 55: Weights of the Green Howe cremations

The cremation weights are low in comparison with some other sites in the study; none meet McKinley's (1993) average for a complete skeleton. Cremation burials 5 and 10 are juveniles which would account for their low weight; cremation burial 11 is an adult. Each of the cremation deposits were different in colour; deposits 5 and 11 were both white to tan indicating a maximum temperature of around 600-800°C. Cremation deposit 11 did have some blue fragments which would not have reached as high a temperature. Cremation deposit 10, the remains of an adolescent were grey, blue and black in colour; this indicates a maximum temperature of c.300° C for the black fragments which were only charred and for the blue-grey fragments a temperature less than 600°C as they were incompletely oxidised.

#### 11.4.4 Artefact associations

Only six of the burials were associated with grave-goods, at this site the younger individuals are more commonly associated with artefacts except for Burial 2.

Burials	Sex	Age	Artefacts
<i>Burial 1</i>	M	18-28	None
Burial 14	F	30-40	None
<i>Burial 3</i>	NA	3 to 5	Plano-convex knife
<i>Burial 4</i>	NA	34-36 perinatal weeks	None
<i>Burial 6</i>	NA	Infant 3-6 months	None
<i>Burial 7</i>	M??	24-30	Charcoal
Burial 13	M	18-22	Flint knife
<i>Burial 8</i>	M?	15-17	Food vessel and 14g of cremated bone
<i>Burial 9</i>	NA	4-5 years	Food vessel
<i>Burial 2 (NHM skull)</i>	F	45-55	Bone pin, flint knife, charcoal
<i>Burial 12</i>	M	30+?	None
<i>Cremation (5)</i>	NA	5-7 years	None
<i>Cremation (10)</i>	NP	<17 years	Urn, burnt flint flakes and un-burnt knife
<i>Cremation (11)</i>	NP	M to OA	None

Table 56: Osteological and artefact associations of the Green Howe burials

#### 11.4.5 Chronology

The dating of this site was carried out in order to test whether the grave-pits were contemporary or sequential. Burials 7, 1 and 13 have a similar range, possibly indicating that the three grave-pits which these burials were deposited in may have been created contemporaneously. Burial 8 in the south of the site is later at 2126-1904 and appears to be a lone event, although it is possible that later burials into grave 1 may have occurred later also. A later phase of activity is represented in burials 11 and 10 which are both cremation deposits.

Date ref	Burial	Date BP	Cal BC
OxA-26851	7	3775 ±30	2294-2057
OxA-26850	1	3759 ±30	2286-2043
OxA-26853	13	3758 ±30	2286-2042
OxA-26852	8	3629 ±29	2126-1904
OxA-26854	11	3516 ±29	1921-1752
OxA-26855	10	3473 ±28	1885-1696

Table 57: Radiocarbon dates of six burials from Green Howe.

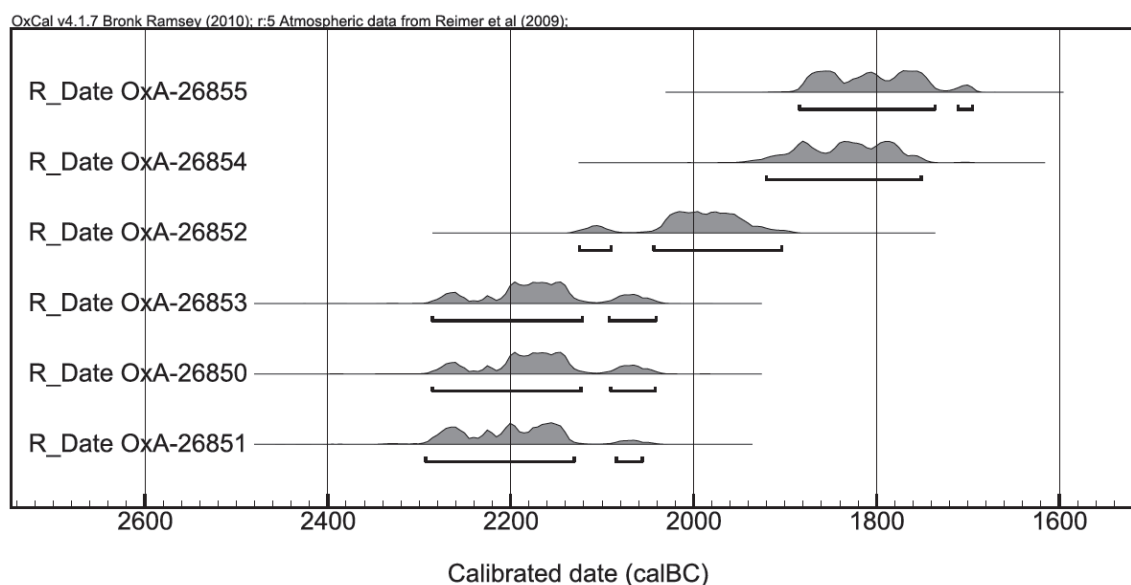


Figure 110: Green Howe plotted radiocarbon dates

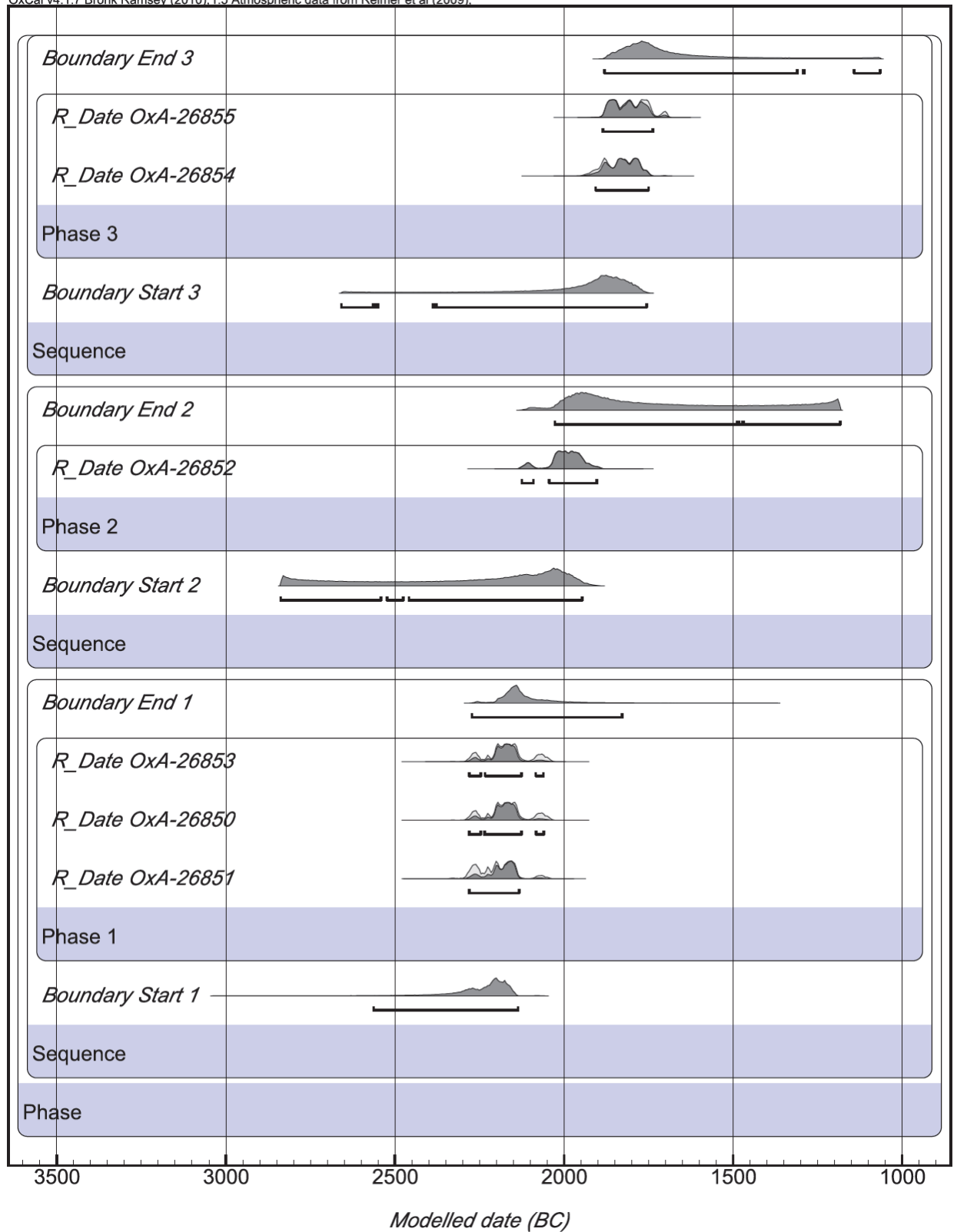


Figure 111: Green Howe modelled radiocarbon dates – into three phases



#### 11.4.6 Lifecourse, burial process and site sequence

The earliest activity at this site can be seen from below pre-barrow surface where there was a hearth; surrounding this area were other indications of late Neolithic activity, including fragments of pottery, flint and fragments of stone axes.

The first activity which relates to the burials was the creation of grave-pits (1, 2 and 4) for burials 1, 7 and 13.

Burial 7 in grave 2 has the earliest date at 2294-2057 cal BC. Burial 7 is a male adult aged in the late 20s and was around 5'4 to 5'5 (160-163cm) in stature. During childhood this individual suffered an episode of physiological stress which affected his dental development at around the ages of 2-3. During his life this individual also developed a pattern of dental wear to his upper central incisors and right lateral incisor which may be the result of using the teeth for some activity.

Before he was buried a grave-pit was dug on the north side of the barrow, this was dug before the raising of the barrow. When it was time for his burial, the man was laid on his left side in a flexed position with his head to the east and his hands raised up to his face.



Figure 112: Photo of burial 7 in situ, courtesy of Harrogate museums

Burial 1 dates to 2286-2043 cal BC, this was a young adult male aged around 18-28. During his life this individual worked in such a way that he developed Schmorl's nodes to his thoracic vertebrae.

Both the man's clavicles were robust towards the ends near the shoulders. This indicates force in a downward direction applied to the clavicles, possibly caused by carrying heavy loads in both hands, with both arms extended along the sides. The costal tubercle on both clavicles also indicates generalised stress of the pectoral girdle (Capasso et al. 1999, 50).



Figure 113: the clavicles of burial 1.

Around the time of his death, grave 1 was dug at the centre of the barrow area; this grave-pit was again used prior to the raising of the barrow. This grave-pit was firstly used for the interment of burial 1. He was laid at the southwest end and near a boulder of limestone which had traces of burning (Wood 1972, 4). It is not possible to say how he was positioned during burial due to later disturbance. At the other end of the grave, about 0.3m from the presumed position of the feet of burial 1 was another boulder of grit-stone set on edge with the flat side towards the grave and fixed in position with smaller stones (this may have originally been a hearth stone).

At some point after his burial, his cranium and some of his long bones were removed; this seems to have happened around the time of the insertion of burial 2.

Burial 2 was an adult female aged around 45-55. This individual had extreme dental wear down to the roots on the lower dentition as well as calculus and ante-mortem loss of some of the molars.

Before she was buried a bone pin was placed at the back of her head. She was laid in the grave-pit during which time burial 1 was disturbed. She was placed in a flexed position on her right side with her right hand to her face and the left arm across her lower body. The body was laid on 'a mass of soft material', probably plants (Wood 1972, 6). The mourners placed a used flint knife near her pelvis which may have belonged to the deceased.

Later inserted into this grave-pit was burial 3. This was a young child who was laid on the right side in a flexed position with the head to the south-west. The child's hands were positioned over the lower body; the mourners placed a small oval plano-convex knife near the spine. A deposit of charcoal surrounded the body and is likely to result from a burning ritual in association with this burial.



Figure 114: replica of plano-convex knife (courtesy of Harrogate Museum)

Near the east side of grave 1, at the level of the old turf line was a neonate (burial 4) covered by a small cairn of stones. After this burial, the whole of grave-pit 1 was then covered by a turf mound.

Dating to around the same time as grave one was grave 4 which contained burial 13. Burial 13 is the remains of a young adult male aged around 18-22; this individual dates to 2286-2042 cal BC. This individual had an asymmetric mandible, the right side being wider by almost 5mm this is likely to have occurred during development.

He had a strong muscle marker for brachialis on his right ulna and radius as well as eburnation on the radial facet of the right ulna. These all seem to indicate a right handed individual who was involved in heavy labour (possibly agriculture) which has caused slight osteoarthritis to this joint (Capasso et al. 1999, 81).

When it was time for his burial, the grave-pit was dug on the north-east side of the barrow. The young man was then placed in a flexed position partially on his left side. A flint knife was placed with his body.



Figure 115: Photo of burial 13 within grave-pit 4

The next in the dated sequence is burial 8, an adolescent dated to 2126-1904 cal BC. From the fusion of the bone epiphyses this individual was aged around 15-17 years at death. From the narrowness of the sciatic notches of this individual it is likely to be a male. This young male had not suffered any interruptions to his growth and has no indications of ill health throughout his life. As there were no lesions on his bones he may have suffered illness or injury which caused a quick death, a more drawn out illness would leave lesions on the bones. Before he was buried, a grave-pit was dug in the south half of the barrow; this is likely to have been the last activity carried out before the raising of the barrow mound. Before he was put into the grave the surface was covered in a layer of plant material. He was then put into the grave, laid on his back with the head to the west but the face turned south (Wood 1972, 6). Even though he was placed on his back, his legs were flexed and also faced south. A food



vessel was placed between his knees and upper body. A small amount of cremated bone was also placed in his grave and may have been a token from a cremation deposit which was buried elsewhere.

After these burials were completed the barrow mound was constructed, an additional turf layer was constructed over the central turf mound which extended over all four grave-pits.



Figure 116: Photo of burial 8 during excavation, courtesy of Yorkshire Archaeological Society.

There were a few burials which were not placed in grave pits. Burial 9 was a child aged around 4-5 years, who was placed above the old turf line on the east side of the central turf mound, and covered by more turf. This individual had been laid northeast to southwest on the left side in a flexed position. A crushed food vessel was near the skull.

Below the revetment on the northeast side, above one side of grave 4 was the skeleton of an adult female (burial 14). This woman was aged around 30-40. During childhood this individual had suffered two episodes of interruptions to her growth between the ages of 1.5 to 3 years. Despite this she grew into adulthood and lived well enough to develop calculus on her teeth as well as periodontal disease.

After she died, the woman was buried near and above the young adult male, burial 13. A copper stain on the back of the cranium may indicate that she was buried with a bronze grave-good.

Later the cremated remains of an adolescent (burial 5) were placed into the turf mound. The deposit was 0.3m down and marked on the surface of the mound by a cairn of stones. Next to this cairn was a rough wall of stones in front of which burial 6, an infant was buried.

Burial 12 was an adult male aged in the late 20s to early 30s. During life he had suffered degeneration of his spine; extra bone had formed around his vertebrae and Schmorl's nodes in the vertebrae all indicate that he spent some time doing heavy labour which led him to develop osteoarthritis of the spine.

During burial he was inserted in the top of the mound and was placed in a flexed position. At some point after his burial his body was disturbed and scattered over a small area.

Burial 11 an adult of middle to old age dates to 1921-1752 cal BC. This individual was cremated, after these remains were cremated and gathered from the pyre a stone-lined pit was created which was not very deep into the mound. The cremated remains were deposited into the stone-lined pit and were then covered with a limestone capstone before being further covered with soil.

After the death of burial 10 (1885-1696 cal BC) an adolescent individual; the body was cremated, the bones were gathered and placed into an urn. Some flint flakes had also been burned with this individual's body as part of the cremation rite. A pit was dug into the side of the mound for the burial, around this time a leaf-shaped flint knife was placed with the remains.

#### 11.4.7 Discussion

Wood (1972, 22) discusses the importance of the central grave-pit, the pit is seen as important due to its size and re-opening for later burials. Individual burials were covered with small mounds; the site was already a small cemetery by the time the mound itself was constructed.

While the three earliest used grave-pits may have been used contemporaneously, only the central pit was used as a focus for a number of burials. From the earliest burial of an adult male to the burials of small children the central grave was used for the burial of three individuals and later was the focal area for three other burials. As only the first burial from the central grave sequence was dated, it is not possible to say whether the other burials which were placed into this pit were deposited in a short or long sequence.

Only the central grave-pit was used repeatedly in this way, perhaps there was some significance to the centre of the barrow, or this area of the site was remembered.

The majority of individuals at the site are young adult males; this may indicate a predominant association between the place and this particular age and gender group.

The older female individual (burial 2) also probably had some importance; as her burial disturbed burial 1 during which the man's skull and some long bones appear to have been removed. That the small bones of his hands and feet along with the patellae (knee caps) survived appears to confirm that these bones were purposefully removed by people. These parts of this young man may have been removed and placed elsewhere for curation and possible ancestor reverence. Alternatively, the identity of this individual may have conflicted with that of the woman (burial 2) who was next inserted here.

## 11.5 Brackenber cairn, Cumbria

### 11.5.1 Introduction

In 2011 North Pennine Archaeology Ltd undertook the excavation of an earthwork enclosure at Brackenber Moor with members of Appleby Archaeology Group and volunteers of the Altogether Archaeology Project (Railton 2011). The site was thought to be Roman in date, however, on the excavation of three trenches the site was revealed to be an Early Bronze Age burial monument. Cremated human remains were found in eight samples from seven contexts.

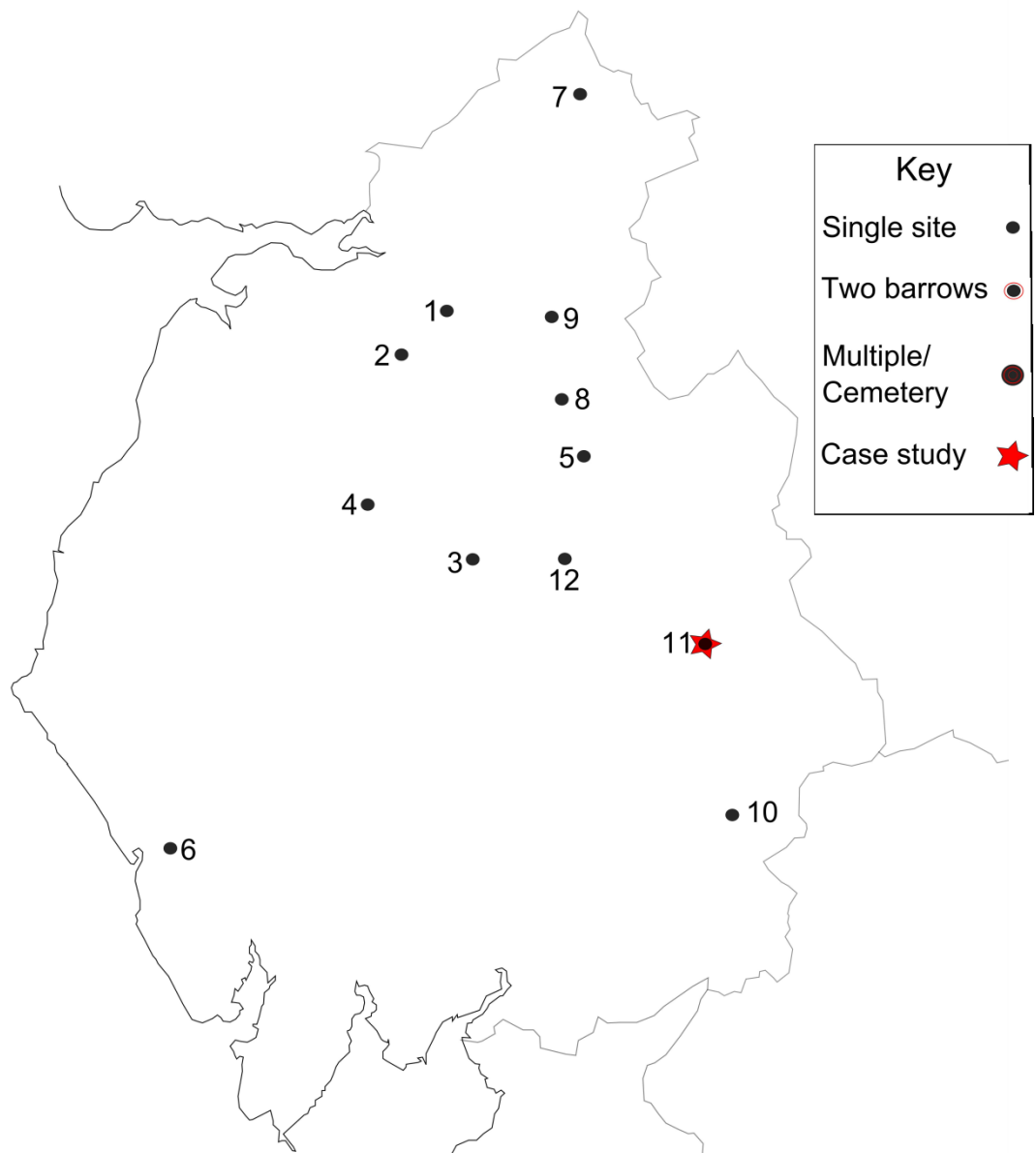


Figure 117: Map of sites in the north group, includes location of Brackenber (11).



### 11.5.2 *Background*

Brackenber Moor is around 3km east from Appleby-in-Westmorland. The site was initially surveyed geophysically then a small excavation was carried out. Excavation revealed an enclosure around 23.5m in diameter; within this enclosure was a central circular platform c.13m in diameter. The west ditch and the adjacent outer bank both showed signs of burning, the east bank had evidence of burning also. These banks were built from sand taken from the ditch (Railton 2011). Several pits were found in the excavated areas, some of which contained cremated human remains. The largest pit was near the south entrance of the enclosure, this pit was 0.45m in diameter and 0.65m deep and contained cremation deposit 13. This deposit included both bone and charcoal; the majority of the bone was at the base of the pit.

The remains of a stone cairn sealed up a pit near the enclosure entrance. The remains of the cairn could be seen as a band of stone around the edge of the central platform, immediately within and east of the inner bank. There was no cairn material over the central platform, it is unclear whether this has been removed or whether the site is a ring-cairn. The cairn material was 1.8m wide and 0.2m deep. There was a cluster of seven pits near the centre of the platform all of which had suffered truncation. Pits 114 and 125 contained only charcoal; the rest contained cremated bone deposits 8, 12, 10 and 9. Cremation deposit 5 was contained in an inverted pot; there was also charcoal in this deposit. Overall, three pots were found these included one rim of a collared urn and two accessory vessels (Railton 2011). The remains from this site have not yet been radiocarbon dated but from the pottery the site roughly dates to around 1900-1700 cal BC. At present, only a small proportion of the enclosed platform has been excavated; further excavation of the site is planned in the near future.

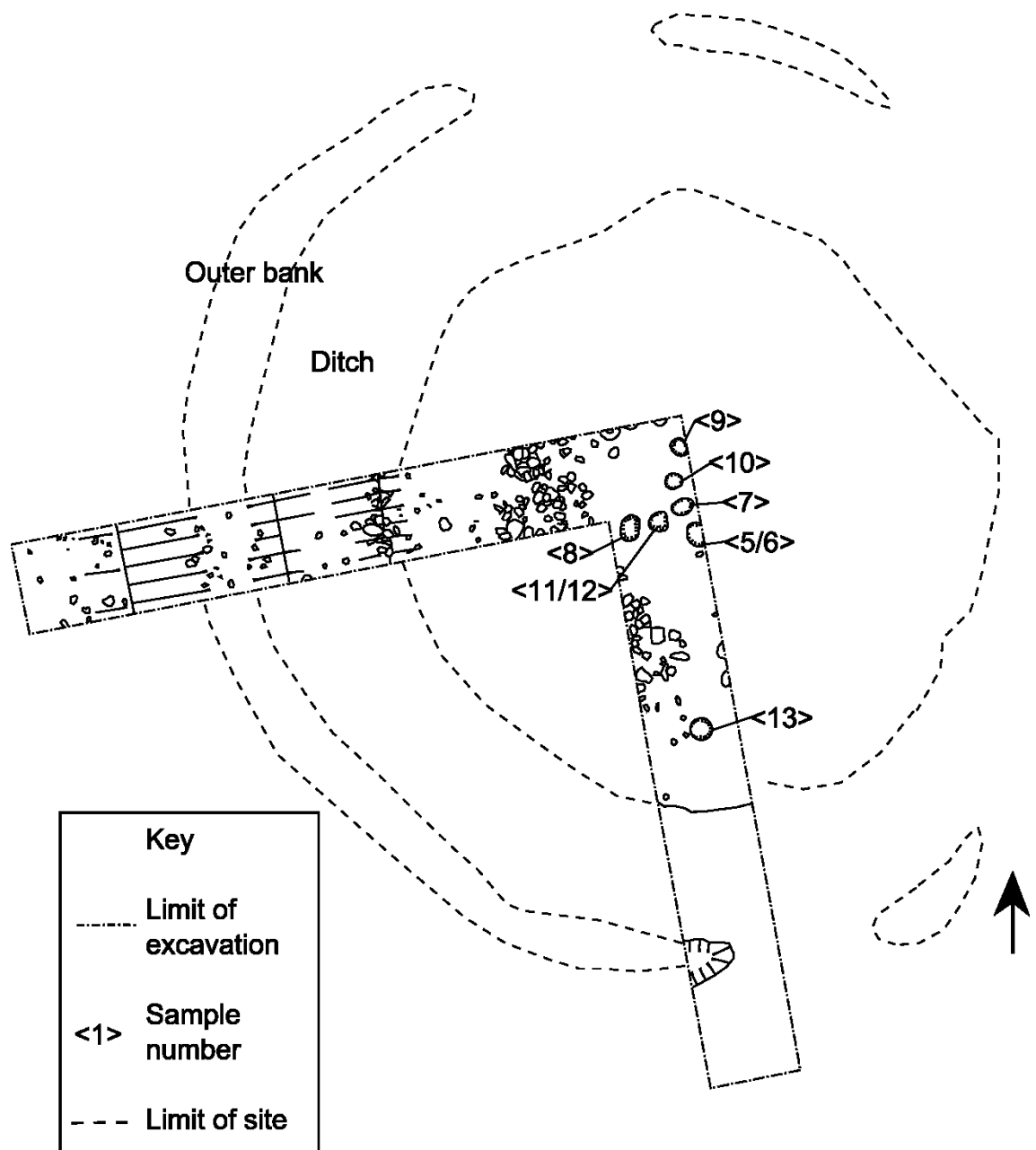


Figure 118: Plan of Brackenber showing excavated area (after Railton 2011)

### 11.5.3 Osteological summary

The cremated remains represent a minimum number of five individuals, of which there were four adults and one juvenile (see appendix 17.13). Of the adults it was possible to estimate the sex of three individuals, there is one probable male and two probable females, the other deposit was too fragmented for sex estimation. One of the females is an adult in the middle to older adult range (30+) and one is in the middle adult age range (30 – 45). It was not possible to estimate a more specific age for the other adults. The juvenile is an infant aged around 6-18 months from the dentition. While it

is rare to find pathology on cremated bone, the assemblage reveals one individual with osteoarthritis and button osteoma (Eshed et al. 2002).

Sample number	MNI	Sex	Age
Brackenber <13>	1	F??	Middle to older adult
Brackenber <11>, <12>	1	NP	Adult
Brackenber <6>, <5>	1	NA	Infant 6-18 months
Brackenber <8>	1	M??	Adult
Brackenber <10>	1	F??	Middle adult

Table 58: age, sex and MNI of each cremation deposit

#### 11.5.4 Cremation process

The cremated remains were white/tan to pale brown in colour which indicates that most of the remains were fully cremated at around 600°C. Only one of the cremated deposits is large enough to represent a 'normal' cremation burial at 63.9% completeness; the other adult deposits at 27 to 407g are either partial deposits or have suffered from plough damage.

Sample	Total bone
Brackenber <13>	1077.5
Brackenber <11>	27.5
Brackenber <5>	1.2
Brackenber <6>	33.8
Brackenber <12>	120.9
Brackenber <8>	73.3
Brackenber <10>	407.1

Table 59: total weight of cremated bone (in g) in each sample

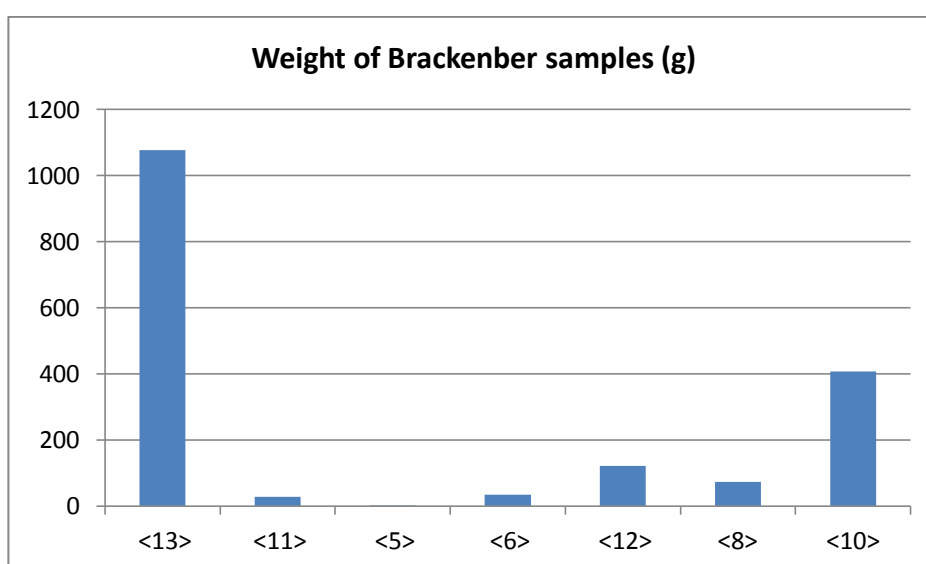


Figure 119: Comparison of cremation weights from Brackenber.

The cranium was has the highest average for inclusion/survival in the cremation deposits at Brackenber. The teeth have survived well, bearing in mind that teeth shatter during the cremation process.

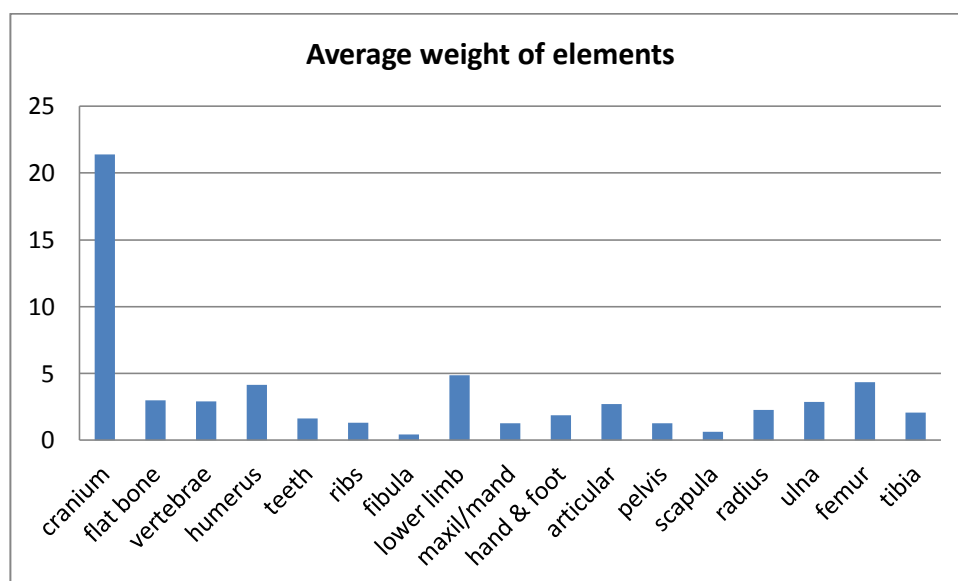


Figure 120: Comparison of average weights of skeletal elements from Brackenber.

#### 11.5.5 *Burial process*

Without radiocarbon dates any possible sequence is hypothetical. However, it seems likely that the ditch and bank were created first in order to form a boundary around the site. Then the various pits would have been dug for the deposition of the cremated remains. The evidence of burning associated with the ditch and banks may be associated with early activity or with other ritual burning events.

Cremation 13 is the remains of a middle-older adult probable female. During this woman's life she developed extra bone growth on the finger bones as well as osteophytosis to the vertebrae and alterations to the joint of the mandible; this shows that this woman probably had osteoarthritis. She also had possible button osteoma on the cranium. The latter would not have had any effect on this individual; the osteoarthritis may have caused some discomfort. Due to the cremation of the remains it is not possible to see the extent of further bone alterations.



Figure 121: <13> in situ



Figures 122: a) a distal phalanx from cremation 13; b) a fragment of vertebra, both with extra bone formation.



Figure 123: a cranial fragment from cremation 13 showing small defects (circled) which are possible button osteoma.

After the woman died, her body was prepared for the cremation rite. From the fragmentation and survival of the cranial fragments, she was placed on her left side on the pyre. After the cremation was complete and cooled the woman's remains were scooped out, perhaps with a shovel or other container. A large amount of charcoal was collected with her bones and this was all put into a collared urn which was placed into the pit. This extremely large amount of charcoal (461g) may mean the pyre was nearby.

Other individuals who were buried include an infant whose remains were placed in a vessel; and an adult male and a middle adult female.

This female may have been carrying out activities which caused enthesopathies to the teres major and pectoralis major insertions on this bone. According to Capasso et al. (1999) this is caused by the repeated extension and flexion of the arm, they suggest the scraping of animal hides or rowing as activities which are known to cause such markers.



Figure 124: Fragment of humerus with MSM from a young adult female at Brackenber.

#### 11.5.6 *Discussion*

At Brackenber, the site acted to enclose and separate the dead from the living. Other unexcavated sites nearby are likely to have formed with this site, an extended mortuary complex (Railton pers comm.). The burials of adults, both male and female are represented, and the young child was also buried here. At this point not enough of the site has been excavated to make any conclusions on burial patterns or any preference for identities here. However, the burial of the child here was interred singly, which contrasts to children buried with adults at other sites in the North area of the study such as at Aglionby and Greystoke. This infant was cremated and buried singly (the remains would not have survived so well if this individual was part of a multiple cremation) and associated with pottery. The other individuals were also single deposits; time was taken in the funeral activities of each individual, keeping each individual separate.

### 11.6 Conclusion

From the four sites which have been radiocarbon dated we can see there is variation in the length of time the sites were used and in the burial practices which took place. The sites of Hindlow and Green Howe had the burials of both inhumations and cremations and show longer use than those which only have cremation (Whitelow and Brackenber). Church Lawton North is also likely to have had an inhumation burial which did not survive so is likely to have had a longer time-frame of use than is shown by the radiocarbon dates.

Site	Date range (C-14 or artefacts)
Hindlow, Derbyshire	2915-1520 cal BC
Church Lawton North, Cheshire	2115-1691 cal BC
Green Howe, North Yorkshire	2294-1696 cal BC
Whitelow, Lancashire	2027-1743 cal BC
Brackenber, Cumbria	c. 1900-1700 (from artefacts)

Table 60: date ranges of the five case study sites.

Out of the four sites which were radiocarbon dated, Hindlow shows the longest use with its beginnings in the Late Neolithic. Contrastingly, Whitelow was only used for a shorter time of around 300 years and Brackenber may have a similar date range from the associated artefacts. These differences may reflect various aspects of possible local identities including: regional traditions, the stability or movement of local populations, or different beliefs or superstitions on the accessibility or liminality of the dead.

How do these compare with other dates for these site types and dates from these regions? Whitelow can be compared with dates from other sites in Lancashire; most of these sites date to within Roberts (2008) phases 3-4 (2050-1500 BC). Noon Hill has an earlier date range, perhaps due to the possible inhumation which did not survive the soil conditions.

Site	Date	Material
Whitelow	2072-1743	Bone
Moseley Height	1880-1610	Bone
Shuttleworth	2050-1730	Bone
Noon Hill	2210-2020	Charcoal
Hades Hill	2040-1870	Bone

Table 61: Radiocarbon dated sites in Lancashire (Whitelow see other dates from Barrowclough 2008).



Outside of Lancashire and Cumbria, the case study sites have longer use but further analysis of sites in these areas would be required to ascertain any specific patterns.

Other sites from the study which were not radiocarbon dated are varied in the amount of contextual information which survives. Object associations were compared however (see appendix 16.7) these were necessarily broad and placed sites in two categories. The early group dates from 2500-2050 BC and the later (in which most sites in the study fall) dates from 2050-1500 BC. Only nine sites had objects which place them into the early category, of these sites, six appear to date over both categories.

These case studies reveal differences in structure, form, use and also differences in the spread of age and sex groups at each site. Both Hindlow and Green Howe are more associated with adult males perhaps indicating a preference for the use of this site for such individuals. At Hindlow the long time for which the site was in use may be interpreted as a vessel for memories. These memories may have become more distorted over time, which would perhaps explain the disturbance of earlier burials by the later ones.

At Church Lawton the small mortuary complex had strong associations with fire; this might have been seen as a cleansing force which was part of the ritual which extended out of the pyre and into other rituals associated with the deposition of the remains.

There is a concern with the central pit at Green Howe; this particular part of the site was returned to for the burial of adults and children. These individuals may have been remembered over time and associated with the later people who were interred through aspects of their person and identities.

At Whitelow, as at Church Lawton, fire was an important part of the mortuary rite, transforming the body and breaking its boundaries with the living; Brackenber is similar in some ways, both have only individual cremated deposits, and there is no mingling of different individuals.

#### Part 4: Establishing Early Bronze Age identities

As discussed in chapter 4, past studies of identity have been limited to single categories and have also been static and not continuous. We have seen how identities can be accessed through processes of life and death, and how these may be seen from individuals as well as whole mortuary sites.

##### *Finding social age?*

Kamp (2001a, 10) discusses the importance of determining significant cultural age categories and suggests looking for differences which could imply local age definitions through archaeological data. This would be seen through the sequence of life stages which can be supported using multiple lines of evidence (Kamp 2001a, 8). Halcrow and Tayles (2008, 203) discuss the limitations in this approach as it would imply a straightforward reflection of status in burial evidence (Parker Pearson 1982). However, despite these limitations, the examination of differences in biological age, skeletal health and burial seems the most logical starting point in finding social age groups within this study.

Here the creation of social age grades is attempted (see table 62). Of necessity social age categories are developed from biological age ranges, but age grades are more flexible and, in some cases, broader than the biological age groups. The overlaps in these stages are socially recognised transitions (Halcrow and Tayles 2008).

Biological age	Social age	Associations
Peri/neonate	The just born	Liminal, death, life, plastic, dependant, tenuous
Infant	The new child	Growth, dependant, learning, developing, socialisation, recognition, language
Child (3-12)	The established child	Learning and using skills, growth, movement, social acceptance, survival of illness, increased independence, contributing to the group
Adolescent (13-16/18)	The youth	Becoming skilled, specialisation, change, rites of passage, becoming adult, transition, sexuality, gender separation, ritual
Young adult (16/18-25)	The new adult	Separation, responsibility, intergroup movement, independent, activity, parenthood, establishing self but still may be supervised, knowledgeable but un-wise
Mature adult (20s-early 40s)	The established adult	Parenthood, partnership, activity, passing on knowledge, providing, leadership, adept at skills

Older adult (40+)	The elder	Knowledge, wisdom, less active, grandparenthood, survivor, liminal, revered, death
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Table 62: Social age grades and their associations.

### *Integrating identity*

Age is something which causes fluctuations and changes in our selves, thus age is connected to a continuing process of identity. Within individuals it can be seen biologically as processes of renewal and deterioration of the skeleton and socially it can be seen in the different roles and cultural norms which are taken during the lifecourse. Perceptions, feelings and appearances of gender also may alter through the life, with individuals becoming more sexed and gendered at biological adolescence, peaking through fertility and child-rearing and changing with greater age when skills and knowledge are passed on.

Rites of passage are likely to be related to social grades of age and gender where aspects of the person are linked and fluid. These aspects of the person are likely to be most performed through individuals experiencing fluctuations in identity. For example, new mothers may experience a loss of self through new expected roles and bodily changes; although in many pre-industrial societies child-bearing is a reason for being (Kitzinger 1978, 35).

The burial process is in itself a rite of passage for the dead and the living; this can be seen in the individual case studies. Some aspects of burial ritual are likely to be for the dead, such as food offerings (though this may also be argued to show-off the resources of the group) other parts of the burial, such as the wrapping or containment of the dead are likely to be for the protection of the dead and the living.

Lucas (1996) and Sørensen (1997) discuss the placement of objects on the body and how they may be used to emphasise particular parts of the body which might be thought transitional, dangerous or polluting. Grave-goods associated with burials in the study were often placed around the head, behind and above the head, and also in front of the face.

Within in the study, out of 55 cases where it was possible to see object placement in relation to the body 39 objects were placed around the skull, of these the majority were placed near or in front of the face, or behind the head. Some of these objects such as bone pins can be ruled out as being part of dress or shroud wrappings;

however this placement near the head could still be important. Of the different object types, pottery and flint objects were most often placed around the head. Other areas of possible importance for the placement of objects around the body were the spine, knees and pelvis.

Examples of this practice can also be seen in some of the individual case studies as well as through inhumation burials in Yorkshire (contextual information from other areas is less clear). Placement of objects in cremation pyres is of course less accessible but might be hypothesised through the areas of the body with colouration from copper, as for example on cranial fragments from Beech Hall, Cheshire (see appendix 16.3).

The chapters which follow are discussions of male, female and child identities in the Early Bronze Age. These discussions attempt to take a different view of these identities through examining and at times disproving roles which have been ascribed to males or females, and also, through thinking about different kinds of identities which might be visible from the osteoarchaeological evidence.

## **Chapter 12: Male identities in the Bronze Age**

### *12.1 Introduction*

Bronze Age barrow burials have more commonly been thought to be that of important adult men; the skeletal evidence gathered within this study indicates that whilst men, women and children are represented, there is a higher frequency of adult males buried (or recovered) at round barrows. To summarise the results on male individuals (see chapters 8 and 9) within the study there are a total of 94 inhumed males, and 16 cremated males. There were 24 males with LEH (32%), 33 males with periodontal disease (45%), and 5 males with cribra orbitalia (5%). Males in the study are less often associated with artefacts (see tables 13-15 for details).

Why would there be more male individuals and what possible identities are represented by the male burials? What evidence exists for previously presumed identities; if these male identities can be disproven what alternative reasons are there for these individuals being buried at barrow sites?

### *12.2 Background*

Attempts to see social hierarchy in Bronze Age burials began with antiquarian assumptions of burial positions within barrows and associated artefacts. Culture historic interpretations such as incoming beaker people and Wessex elites (Bradley 1991; Woodward 2002) have not really been updated.

Artefacts have continued to be the main focus of differentiating status of burials with male burials at the top of any assumed hierarchy, for example Case (2004) analysed beaker burials and distinguished five groups of burials and their relationships with social status; the groups identified range from the rich rare burials of men accompanied with beaker pottery and exceptional objects (copper or bronze knives, bracers, spatula, stone axes and objects of gold or amber); through to more common burials of both men women and children with more common objects such as scrapers and awls or beaker pottery; to the lowest of individuals associated with beaker burials but without beaker pottery themselves (Fitzpatrick 2011, 198).

Status has always been assumed through objects and maleness; male identities which have been discussed within the literature could be said to include: chief, big-man,

warrior, hunter and metal worker. However, these kinds of archetypes are rarely discussed within the recent archaeological record, especially within the UK.

### *12.3 Men as leaders, men of status*

Here the evidence and ideas for men of status will be discussed. Within Bronze Age literature interpretations have been based on rich burials and studies of barrow groups as territories and genealogical maps. Even though the idea of men as chiefs seems outdated, chiefly male figures in the Early Bronze Age are still sometimes discussed, as in the case of the recently reappraised Gristhorpe man (Melton et al. 2010).

#### *12.3.1 Chieftains and ascribed status*

The popularity of anthropology and ethnology during the height of processual archaeological research led to the popularity of Chiefdoms in Neolithic and Bronze Age archaeology which further developed from Renfrew's (1973) study of late Neolithic Wessex as a chiefdom 'state'. Bronze Age round barrows were thought to indicate territories or chiefdoms (Fleming 1971; Kristiansen 1992; Barrett 1994, 159). Chiefdom is a descriptive term for social complexity in stateless societies (Earle 1987, 279). A chiefdom society is thought to be variable and may be classed as: group orientated, individualising, militaristic, theocratic, stratified/ranked, non-ranked, simple and, complex (Earle 1987, 280). Earle (2000) describes a chiefdom as regionally organised with developing hierarchy; social differentiation being based on access to, or ownership of resources and wealth.

Following from this a chieftain may be described as a leader of a group where leadership is ascribed, or a powerful person who has access to rare objects through exchange networks by political control, a chief may take office on inheritance or war (Gilman 1981; Earle 2000).

Earle (1987, 285) discusses the archaeological work relating chiefdoms to the construction of megaliths in Europe, which are seen as evidence for 'considerable central direction of labour'. These monuments are not thought by Earle to be associated with social differentiation in burials but, instead relate to the idea of group orientated chiefdoms where the leader serves the group.

The status of the chief figure is usually thought to have been ascribed (inherited) and therefore not age dependent, this is thought to be demonstrated by child burials;

Fitzpatrick (2011, 212) discusses the example at Barrow Hills with three copper rings, however this example was interpreted by Brück (2004) as gifts from mourners. Examples of child burials with artefacts exist but are problematic; firstly, the age of 'juvenile' individuals is not always made clear in descriptions, the Folkton individual associated with the Folkton drums was an adolescent, and may have been viewed within its society as an adult (Kinnes and Longworth 1985). Also the sex of child burials is at times assumed from their burial side, though sex assessment of child skeletons is not possible with any reliability (Sheuer and Black 2006). These approaches to child burials are the same as for adult burials which is problematic in assumptions of how children are perceived in past societies.

Bronze Age ascribed status is implied in discussion of barrows as genealogical maps (Barrett 1994; Garwood 1991) this would interpret round barrows as family burial grounds, used over generations, however there is no radiocarbon evidence yet for such a practice. This establishes both graves and burial mounds as fixed places which situate individuals within the genealogical map (Barrett 1994, 112).

The chiefdom idea is problematic as the generalisations about such systems give past societies attributes of modern states, and it is assumed that a 'polity' would display a territorial boundary (Barrett 1994, 161). If Bronze Age societies operated on a hierarchy of ascribed status this would mean that this status was not solely male but within families, there is no evidence to suggest this.

Overall the idea of chiefs is problematic due to the presumption of the widespread dominance of the chiefdom social structure and/or ideology. If the chief as an identity could be seen from the archaeological evidence, it could be interpreted as an identity which is assumed as a representation of the group and for the group.

### 12.3.2 *'Big-man' societies and achieved status*

The 'big man' is a conceptual ideal developed to differentiate Melanesian self-made leaders from ascribed chiefs. A big man makes his own power based on his own achievement and does not gather wealth for descendants to inherit. These individuals may be warriors, ritual practitioners, orators, leaders and organisers of the community and community events such as feasts and exchanges (Brown 1990, 97). Loyalty of the group to the big man requires continuous reinforcement (Sahlins 1963, 292). The

organisation of gift giving ceremonies is important in Melanesian societies for this reason.

In Highland New Guinea the 'big man' is the representative of a clan during ceremonial exchange etc. (Godelier and Strathern 1991; Fowler 2004). Moka exchange is based on competition, influence and alliances between groups in order to both live peaceably with other groups while at the same time competing for dominance (Strathern 1971, 214). In Melanesia the reputation and renown of big men may in some cases increase or endure for years after death, and the individual may be evoked as an ancestor. The ancestral big man may be helpful or feared; sacrifice or offerings may be made to gain assistance of ancestors (Lindstrom 1990, 313).

Pierpont's (1980) study of Bronze Age artefacts and burials supported a 'big man' type of social structure, where social position depended on achievement. Pierpont's (1980) analysis examines the variation in the quality of artefacts such as plano-convex knives and perforated axes. Pierpont discovered that larger, better made examples were most often found in graves with larger assemblages (Pierpont 1980, 142). Overall Pierpont discussed the importance of individual status which he relates to age and sex grades, where EBA society may be characterised by achieved status. This is seen in adult males aged 30-40 with rich burial assemblages which are interpreted as for social display (Pierpont 1980, 233).

### *12.3.3 Differentiating hierarchies: evidence of male leaders in Bronze Age Britain?*

Burial and artefactual evidence from EBA Britain might reveal individuals of status, although it seems unlikely that we can differentiate ascribed or achieved status groups from the archaeological evidence as achieved status might also extend outside of male only groups.

Rich burials in the Wessex area have been interpreted as individuals of high status but in most cases no human remains have survived which makes andro-centric assumptions problematic. For example, at Chilbolton no skeletal remains were recovered, comparisons have been made with this assemblage and that of Bush Barrow due to the gold lozenges which were found at both sites. The Chilbolton assemblage is interpreted by Needham and Woodward (2008, 44) as being related to some kind of funerary activity and also as a representation of the success of that



community. Kristiansen interprets the Wessex assemblages as part of a European 'warrior aristocracy', these individuals were above the traditional tribal warrior with bow, arrow and dagger (1999, 177). However, Kristiansen's interpretation is based over a wide space both chronologically and geographically, which would require an amount of generalisation.

The sceptres from Bush Barrow and Clandon Barrow which accompanied burials described by Ashbee as 'princelings' are cushion mace heads (Ashbee 1960, 119). The Bush Barrow example is of a simple finish, but bone mounts from the shaft were also found; the Clandon example is a jet head with four inset gold bosses. Needham and Woodward (2008, 25) discuss the rarity of such maceheads in southern England, as they seem to be outliers of a northern tradition. Although it is unclear whether human remains were with the Clandon assemblage, Needham and Woodward (2008, 44) associate such artefacts with leaders of the community, they described the macehead as ceremonial. Rich objects have been classed by rarity of material, craft specialisation and time required in acquisition of objects.

The identities of 'chiefs' and 'big-men' may be misleading as they relate to specific terms coined to describe social structures in anthropological and ethnographic cases (for example Strathern 1975). It is possible such individuals did exist in the Early Bronze Age but if so this would be most likely in the Wessex area which has different evidence than the Early Bronze Age in the rest of Britain. Pierpont's (1980) study is a useful overview of prehistoric archaeology in Yorkshire. However, this study makes assumptions about the 'quality' and status of objects and what this means socially. 'Status' should, like other potential aspects of identity, be looked at in different ways, through the details of the burials and also through aspects such as health.

Within the study there is a lack of male individuals with artefact assemblages which might indicate status following these traditional assumptions. As discussed in the results of the burial evidence the materials from which artefacts are made do not seem to have any gender associations.

Within the sample there are more males buried in wooden containers or surrounds. Burials within timber coffins have been found in Yorkshire and the North-East, such as that at Loose Howe where a boat like coffin was also associated with a canoe. Ashbee

(1960, 91) also discusses an urned richly equipped warrior cremation at the same site. These timber coffins are at times described as boat-like, and may have been related to the deceased's perceived journey, or may relate to a different status.

Osteologically male status might be indicated by their lower prevalence of cribra orbitalia and higher prevalence in periodontal disease as this could be linked to a higher quantity of meat in the male diet. As there are a larger percentage of older adult males within the inhumation sample, there may be a connection with age and status in Bronze Age society. Even though generally male burials were less likely to be associated with artefacts, older males in the study are more likely to be associated with objects. However, as the males are less likely to live to their 40s onwards than females, it seems that men may have been required to take different risks in their lives. It is also possible that dying young gave an individual a high death status.

Even if high status as an individual or leader can be seen, this is one aspect of identity which fits into the whole, comprised of other aspects such as age, sex, and activities.

#### *12.4 Warriors and weapons*

Warriors are one of the most common male identities discussed in the literature (Shennan 1982; Earle and Kristiansen 2010). Saruaw (2006) discusses male warrior identity using evidence from bell beaker burials in Denmark and Europe. Central European bell beaker burials are mostly found in flat grave cemeteries, the dead are usually accompanied by copper daggers, wrist-guards and arrowheads. The way that the arrowheads are found indicates that arrows and bows would have been placed into these graves (Saruaw 2006, 65). These kinds of artefacts have been associated with war and hunting; also associated beakers have been related to the consumption of alcohol (Shennan 1982; Sherratt 1987). This has led to the idea of a male-drinking/warrior/hunter group within Chalcolithic/Early Bronze Age society. However, in the UK, beakers have been shown to contain a wide variety of substances including dairy and plant-oil based products (Fitpatrick 2011, 210).

Saruaw (2006, 66) describes the warriors appearance with weapons, special clothes, jewellery and tattoos as a way to demonstrate their 'malehood and personal identity'. Saruaw then goes on to discuss three models of warrior organisation from social anthropology: 1. A society where warriors are all men, 2. A society where warriors are

all men, but some/all are organised into specialised/prestigious groups, 3. A society where only certain men are warriors who are organised into war groups.

The burials which were selected for Saruaw's study have no or little surviving human remains due to the soil conditions, the interpretations are thus based on the grave goods and position of the graves (Saruaw 2006, 67). The lack of human remains in this study is problematic as it is assumed that these individuals were all male without any osteological evidence. Interpretation is said to be confirmed from a few cases where skeletons were preserved but this seems questionable. This kind of assumption of the sex from artefacts and burial position occurs frequently in European evidence (Sofaer Deverenski 1997). Bell beaker burials where the body is crouched with strict gender associated grave goods and burial orientation has a higher frequency at cemeteries in central and eastern Europe (Saruaw 2006, 71). Saruaw speculates that these burials may be representations of ideal warriors, where male warrior identity is ascribed and symbolised by daggers and similar artefacts (Saruaw 2006, 78). Saruaw concludes that being a warrior was likely to have been connected to age and gender.

Throughout western and central Europe, arrowheads appear to have been the most common type of weapon used for hunting and warfare. In ethnographic examples arrowheads used for hunting were without barbs so they would be easier to extract (Saruaw 2006, 73).

#### 12.4.1 *Ethnographic evidence*

Hodgson (1999) discusses the multiple masculinities of the Maasai; who were socially structured by gender and age. The roles and responsibilities of men within the Maasai changed according to their age-set; between the ages of 12-18 they became *Ilmurran* and were responsible for protecting settlements and livestock (Hodgson 1999, 126). The *Ilmurran* lived in warrior's villages and were always together, they competed at feats of bravery and skill. Each age group within the Maasai was culturally elaborated in their costume and accessories such as spears (Hodgson 1999, 127). The *Ilmurran* later become elders and were less interested in their appearances and instead of spears had a set of sticks for various occasions.

Schulting (in press) discusses the choices of conflict from ethnographic examples; the first preferred action is usually ambush, dawn or night time raids, open battles were

less common. However, some tribal groups such as the Iban of Borneo were more aggressive in expanding into new territory.

#### 12.4.2 Osteological evidence

There is little osteological evidence to indicate widespread use of weapons for interpersonal or group violence in the British Bronze Age. However, this could be due to injuries which have not left any mark on the skeletons, also where remains have been cremated such injuries are less likely to be visible. A study by Schulting and Wysocki (2005) discussed cranial trauma and interpersonal violence in the Neolithic, which shows that cranial trauma is much more common in the Neolithic.

There does not seem to be as much evidence for violence during the Bronze Age although, it is possible that there was a change in the preferred choice of weapon. Arrows are less likely to show marks on the bones (depending on where the person was hit); arrows could cause a great deal of damage to the soft tissues which would not be visible on the bones.

Burial/site	Sex	Injury	Burial context
Yorkshire	M	Cranial fracture	?
Millockstown	M(2)	Fractures to right frontal of cranium	
Barnack	M(2)	Fractures to parietal (L & R)	Barrow
N-E Scotland	M(4)	Skull fractures (R)	
Pyecombe	M	Fractured clavicle (R)	
Cnip	M	Fracture to humerus (L)	
Dunstable		Fracture to humerus	
Barnack	M	Fractured ulna (L)	
Chilbolton	M	Fractured ulna (R)	Beaker c.2200 BC
Dunstable	F	Fractured ulna (L)	
Fordington Farm	M	Fractured ulna (L)	Barrow c.2350 BC
Pyecombe	M	Fractured ulna (L)	Beaker, wrist-guard
Tallington	M	Fractured ulna (R)	
Dunstable		Fractured radius and ulna	
Dunstable		Fractured hand bones	
Dunstable		Fractured ribs	
Steeton's Quarry	M	Fractured fibula (L)	
Barnack	M	Foot bones (L)	Barrow

Table 63: Bronze Age skeletal trauma from Roberts and Cox (2003).

There is not a great deal of evidence for fractures in the Early Bronze Age (see tables 63 and 64). The evidence indicates a majority of injuries to the forearm and cranium, the majority cannot be demonstrated to have been caused by violence. Some of the evidence for trauma discussed by Roberts and Cox (2003) may be late Neolithic. It also must be remembered that Roberts and Cox (2003) is a review of literature not an osteological analysis, so Roberts and Cox relies on published descriptions.

Osteological evidence for violence in the later Middle Bronze Age is discussed by Osgood (2006) at Tormarton, Gloucestershire. Four adult male individuals suffered dramatic weapons injuries: the oldest male in his 30s had been speared twice which pierced his pelvis; one of the other individuals had also been stabbed in the pelvis and in the lumbar vertebrae which would have severed his spinal cord, his skull also suffered a penetrating injury (Osgood 2006, 332).

The male from Stonehenge (see table 56) strongly indicates injury caused by violence, those in table 55 may have been caused by accident. The Stonehenge individual suffered traumatic injuries; a tip of a flint projectile was embedded in the posterior of the sternum, the eleventh rib showed a narrow, deep groove which is the likely point of entry for the flint embedded in the sternum. This projectile would have gone into the back and through the heart; this was a fatal injury. Three ribs also showed evidence of a similar injury, the fourth left rib also contained the tip of a flint arrowhead. This individual was associated with a wrist bracer and three barbed and tanged arrow-heads (Evans 1984, 15-17).

Gibson (1994) argues this was a ritual killing as this man was shot in the back, however this idea seems to hark strongly to the once popular idea of human sacrifice, it seems equally likely this man was shot in the back for some other reason (Thorpe 2006, 153 ). In Europe there is more osteological evidence for violence in the Bronze Age, as for example at Velim, Czech Republic (Harding and Palmer 2007) and at Tollense, Germany (Jantzen et al. 2011)

Burial/site	Sex	Age	Injury	Burial context	Reference
Stonehenge	M	25-30	Projectile trauma to ribs & sternum	Ditch-beaker	Evans 1984
Feizor Nick Cave	F	?	Projectile trauma to 12 <sup>th</sup> thoracic vertebra	Cave	Smith et al. 2007

Cowlam	F	40-50+	Healed blunt force trauma to cranium	Barrow	Watts & Rahtz 1984; & chapter 9
Liff's Low	M	20-30	Healed trauma to distal humerus	Barrow - beaker	See chapter 9
Megdale*	M	35-50	Possible blunt force trauma to frontal	Possible barrow?	See chapter 9
Langton Wold	M	40-50	Partly healed trauma to frontal bone	Barrow	See chapter 9
Gristhorpe	M	36-45+	Healed rib fractures	Barrow- log coffin	Melton et al. 2010
Mill Farm	M	35-45	Healed fracture to tibial condyle	Barrow	Anderson 2002
Oxford University	F	40+	Part-healed blunt force cranial trauma	barrow	Boston et al. 2003
Court Hill	M	YA	Sharp force trauma to humerus	barrow	Grinsell 1971, 120
Withington	F	?	Part healed cranial trauma (cremation)	Barrow c. 1700 BC	Wilson 1981
Cnip, Isle of Lewis	M	OA	Healed facial trauma	? c. 1700 BC	Dunwell et al. 1995
Callis Wold 23	M	?	Healed injury to wrist and forearm	Barrow	Mortimer 1905, 153-6

Table 64: Examples of Bronze Age skeletal trauma. Cowlam, Liff's Low, Megdale, and Langton Wold were examined within this study. \*Megdale may be Neolithic.

There is little evidence within this study for violence (see chapter 9) with two examples from Cowlam and Langton Wold being possibilities.

#### 12.4.3 *Artefact evidence*

There are examples of burials where injury is assumed from the proximity of arrowheads to the skeleton, for example, at Barrow Hills, Radley (Barclay & Halpin 1999) although there is no skeletal evidence. However, the arrowhead in this case was broken at the tip and both barbs were broken (Thorpe 2006, 152). Gibson (1994) also argues that arrowheads found mixed with cremated bone at Sarn-y-Bryn Caled timber circle, were in the body during cremation.

According to Harding (2006, 505) warriors in the Early Bronze Age used arrows and daggers as their two main offensive weapons. Within Britain, the majority of daggers of known provenance came from burial contexts. These objects would not necessarily have been a symbol of warrior status as they would have been common tools for

hunting and other tasks. Often such 'weapons' may have been deposited with the body for visual and symbolic reasons.

Another form of evidence to examine is the functionality of arrowheads. Devaney (2005, 12) found no difference in the size of so-called domestic and ceremonial barbed and tanged arrowheads. Devaney also compared ceremonial and domestic arrowheads with their archaeological contexts; those found in burial contexts are thought to be more commonly ceremonial. However if they were found related to a wound on the skeleton they would be of a 'domestic' context. This assumes a level of difference between the ceremonial and domestic realms.

Smith et al. (2007, 541) assessed the evidence for trauma by flint projectiles (both archaeological and experimental) as trauma of this kind has been little recognised in the osteoarchaeological literature. There are three categories of evidence: flint arrowheads still embedded within the bone; arrowheads which are closely associated with the skeleton and lastly, defects on the bone which may have been caused by injuries. Within the literature, identifications based on wound morphology were the least common; specimens with embedded projectiles were the most common.

Smith et al. (2007, 546) also conducted their own experiment using replica flint-tipped arrows, which were shot into cattle and pig scapulae and cattle ribs, all of which retained some soft tissue. Their study produced internal bevelling, also when embedded lithics were removed and small pieces of flint were left behind. Punctures caused by lithic projectiles were demonstrated to be lozenge or elliptical in shape with internal bevelling also when arrow heads, have struck the bone tangentially, they can produce incised marks which are similar to cut-marks and may be confused with these (Smith et al. 2007, 548).

Heavy objects such as battle axes have been classed as weapons; Edmonds discusses their use as hammers, weapons, or for display (Bradley and Edmonds 2005, 121). Greenwell's excavations revealed eight definite examples and one possible battle axe associated with burials, of which six are from Yorkshire sites. Others were from Lambourn, Berkshire, Snowhill, Gloucestershire and Seghill, Northumberland (Kinnes and Longworth 1985, 129).

The battle-axes at Lambourn, Levisham, Goodmanham 89 and Ganton 18 were all with cremations, of which the Goodmanham example was with an adolescent individual

(Kinnes and Longworth 1985, 58). Those at Snowhill, Seghill, Cowlam 58 and Rudstone 68 examples were all with inhumation burials; two of these were definitely adult males.

The positioning of the battle-axes can be seen at Cowlam and Rudston; at Cowlam 58, the adult male inhumation had the stone-battle axe positioned near his face with traces of the wooden haft in his right hand (Kinnes and Longworth 1985, 58). At Rudston 68, an adult male had a stone battle axe placed behind his shoulders (Kinnes and Longworth 1985, 76). Within this study is also an example at Church Lawton North which is associated with a cremated adult probable female.

It is concluded from artefact evidence that arrows were the most likely form of weapon which has left osteological and archaeological evidence for violence.

Copper knives are usually thought to be daggers for stabbing, or as a symbol of status. Fitzpatrick (2011, 210) discusses the Amesbury archer's ascribed status of warrior or hunter; indicated by the three copper knives and numerous arrow heads. Bronze daggers seem to have had various uses; Barber (2003, 149) discusses Early Bronze Age daggers as close-combat weapons and symbols of social affiliation. Harding (2006, 506) discusses the use of daggers as predominantly for hunting with lesser use as a weapon. There are few traces of combat on the daggers (Thorpe 2006, 153) except for a few examples from the Thames (York 2002). Analysis of edge-wear of Early and Middle Bronze Age daggers in Britain indicates that they were used as thrusting and slashing weapons (Bridgford 1997, York 2002, 85). Bridgford (1997, 7) also found that contact with flesh, bone and wood left no visible damage on Bronze weapons, except for slight blunting. Kristiansen (2002) discusses the use wear of Bronze Age swords in Europe which have evidence for use as slashing and thrusting weapons.

The evidence for use of daggers as weapons in Early Bronze Age seems variable with only some showing evidence of wear. Studies explored the cut-marks made by bronze tools on animal bones as part of butchery and tool making processes (Greenfield 1999). Further microscopic analysis of daggers and human remains could contribute further to our knowledge of violence in the Early Bronze Age.

Within the study there are only three bronze daggers which are associated with burials; all of these are the riveted type. These were found at Stoop High edge,



Derbyshire; Helporthorpe 49, Yorkshire; and at Rudstone 68, Yorkshire (See appendices 16.2 and 16.3.2).

The rarity of these objects might be a further indication of the rarity of interpersonal violence seen in the osteological evidence. While there is not yet any definite evidence for specific dagger wounds; this adds to the argument for the lack of importance of warrior identities within this study.

### *12.5 Occupation: crafters, archers, falconers*

From the artefactual evidence we can be certain that there were individuals who crafted with metals and lithics, although there may have been levels of specialisation; particularly with metals.

Metal workers have been a popular subject of discussion surrounding the burial of the Amesbury archer, although similar artefact assemblages are rare. Beaker-metalworker burials identified by Fitzpatrick (2011, 217) in the UK include the Amesbury archer and a burial at Kirkhaugh, Northumberland. These have been identified by the presence of cushion stones as well as other items such as arrowheads and gold.

A burial at Upton Lovell G2a of a male adult was associated with a large number of perforated bone points, three flint axes (one of which was a battle axe), at the chest was a complete battle axe and a circular stone with signs of use. The burial was also accompanied by a jet/lignite ring, biconical beads and a small bronze awl. Gold traces identified on a slate burnisher associated with this burial were found to be comparable with other Early Bronze Age Wessex metal work; gold traces were also found on Early Bronze Age whetstones at Warminster G5 and Clyffe Pypard (Shell 2000, 271). This burial has been interpreted as a metal worker.

Another possible example is a burial with a collared urn at Sandmill, Wigtownshire, Dumfries and Galloway was associated with three stone blocks, one of which has a linear groove similar to the Upton Lovell piece (Needham 2011, 115).

Harper (1987) assessed the possible extent of toxic metal exposure to Bronze Age metal workers in Europe, concluding that over time exposure to metals leads to poisoning which may affect the neurological and renal systems.

From the presence of antler spatulae with the Amesbury assemblage, Fitzpatrick (2011, 222) suggests that the Amesbury archer was a flint worker, as beaker burials on

the continent with antler tools have been interpreted in this way. Bone and antler tools may both have been for flint working. In Britain other burials with such associations include, Chilbolton, Barrow Hills, Gravelly Guy and Ferrybridge. All of these burials were adult males (Fitzpatrick 2011, 223).

Other possible examples include Green Low, Haddon Field and Mouse Low in Derbyshire which all had burials associated with bone tools (Barnatt and Collis 1996).

Stone bracers or wrist-guards have been thought to be associated with archery; placement for archery is on the inside of the forearm or wrist. Woodward and Hunter (2011, 124) discuss the functionality of wrist-bracers: certain types such as Group VI curved bracers and those with gold caps would not allow an arrow to pass smoothly. In burial contexts, not all bracers are found on the inside of the wrist. This has led to the idea that bracers may have been used for falconry (Woodward and Hunter 2011, 125). Some beaker graves excavated by antiquarians in the north of England included both bracers and the remains of birds of prey; examples include Kelleythorpe in east Yorkshire and Stakor Hill in Derbyshire (Bateman 1861, 80; Mortimer 1905, 275; Woodward and Hunter 2011, 126).

Alternatively bracers may have been for decoration or costume, or may have been worn for symbolic reasons.

#### *12.5.1 Musculoskeletal Stress Markers and occupation*

Although there are a low number of post-cranial bones within the study, musculoskeletal stress markers are most prevalent in males on the clavicles and the upper portions of the bones of the forearms. These muscles, including Biceps brachii, Deltoid, Brachialis and Brachio radialis involve supination of the forearm, abduction of the arm, flexion of the arm at the elbow, pronation of the forearm and rotation.

Robusticity of the clavicles likely indicates carrying of heavy loads with arms extended as well as stress to the pectoral girdle. At least two individuals from Cowlam 3 (one female) had Os Acromiale, which is the non-fusion of the acromion process which is caused by continued and heavy loading of the arm (Capasso et al. 1999, 48). This has been seen in archers from the Mary Rose and also in workers who carry heavy loads on their shoulders.

Altogether the MSM and areas of robusticity in adult males means that they were likely to have been carrying out heavy lifting and/or work which involved supination and pronation of the forearms.

There may have been a difference in whether 'occupations' were specialised or a general skill which Bronze Age individuals needed and learned for everyday life. Whilst metalworking is likely to have required more specialised skills, some knowledge of flint working is likely to have been more common. Overall archery is likely to have been the most common practice relating to violence when looking at the archaeological and osteological evidence for warriors in Early Bronze Age Britain.

Within the study there is no artefact evidence for metalworkers; there are individuals associated with arrowheads which may be an indication of people who hunted.

### 12.6 *Men as fathers*

While there is discussion of male identities relating to status or occupation, there has not been any discussion of males as fathers or as part of family groups. Family relationships and kinship structures would have been important sociologically. However, it cannot be assumed that family groups in the past were structured in the same way as in modern western society. Family relations and structures in the past might be accessed through ethnographic and sociological studies.

Hewlett (2003) discusses fatherhood in gathering and pastoral societies. Cross-cultural studies show that while fathers in these societies rarely have a role in childbirth, the amount of time a father spends with his child varies greatly in different groups. For example, the Bari of South America are known for their practices regarding multiple fathers; the Aki have a high level of father involvement and contrastingly, the Kipsigis have a lack of involvement with their children. Some of these differences are explained by differing gender roles in subsistence practices (Hewlett 2003, 189). Family structures are not necessarily the same in different cultures; among the Ache of Paraguay, children have multiple fathers as paternity is partible. This sort of fatherhood is common in societies in South America (Walker et al. 2010).

Within this study, the majority of adult inhumation burials which are associated with children are male. At Hindlow at least four adult male burials were associated with child remains, however in this case it is not clear whether the adult males had been deliberately placed to disturb the remains of the children (see 11.1). An adult male at Folkton 70, aged 30-40 was buried in a flexed position on his left side and the skeleton of a child was placed against his chest. At both Goodmanham 121 and Ganton 27 there were examples of male adults who were either associated with the remains of children, or these burials had disturbed the child's remains (Greenwell and Rolleston 1877, 174). A juvenile at Cowlam 56 was associated with the burial of two adult males; an adult male at Folkton 70 was also associated with the burial of a child.

These examples are not evidence of fatherhood but hint at the different kinship relations and the roles of adult males in the lives of children which could have taken place in the Early Bronze Age.

### 12.7 Male social age

The visibility of social age grades is unclear, however, looking back to the demographic results of the East inhumation sample, of the adult male biological age groups, 27% were aged 40-50 and 24% were aged 16-25. These are the largest groups in the east male sample. Older adult males were most commonly associated with non-ceramic artefacts, whereas young adult males were equally likely to have objects or no objects at all.

As already discussed, death at a young age could have resulted in a high death status, and older individuals tended to have more associated artefacts. Perhaps from this it can be said that if status was a factor in barrow burials, young/new adult males may have been buried there due to their death status and older/elder males may have been buried at these sites due to age status.

Age	Total individuals	Total artefacts
16-25	20	9
25-30	17	11
30-40	23	11
40-50	23	10
50+	11	14

Table 64: number of adult males in each age group and number of artefacts (i)

These different social age grades would also be linked to particular aspects of identity. The young male would have been important to the future of any group; these individuals still had further potential to fulfil. This lost potential would have been mourned for along with the person.

The elder males would also have been important to the group; this was a different kind of death as such an individual would have gone through different age identities and made strong contribution to the group. They would have been mourned but such life-histories would have been celebrated and added to the mythologies of that person's particular group. This would have been part of the mythos, ideology and reputation of different group identities.

### *12.8 Conclusion*

The most common identities which can be seen in Bronze Age barrow burials within this study are: older males, young adult males and older adult females. As discussed in Chapter 8, the resulting frequency of artefacts with females seems problematic for previous assumptions of male status in Early Bronze Age burials. However, as adult males are the most common demographic found at these sites the evidence for previously assumed male identities was examined.

There is little evidence for men as leaders/chiefs in the literature and no evidence for male leaders within the study. Burials placed in a central position are not always males; the remains of women and children may also be found this way (see chapter 10).

Connell (2005, 67) discusses the construction of masculinity; all societies have cultural accounts of gender, but not all have the concept of 'masculinity' as an aspect which includes violence and domination. Bronze Age men have been interpreted as leaders such as chiefs, as they have been related to the modern normative definition of masculinity. Hegemonic masculinity can be defined as the culturally normative stereotype of male behaviour; our stereotypes of masculinity are of course different from those in the past.

Alternative male identities such as fathers and social age groups have been discussed. Previously assumed male identities such as chiefs and warriors may be symbolic, for example, war may have at times been ritualised. Warrior attributes may have been

related to a symbolic or group identity, as there is not much skeletal evidence for violence, although some violence is likely to have occurred.

Schulting (in press) discusses the possible differences in the evidence reflecting war, feud and interpersonal violence. Violence may have been enacted through small scale events such as cattle raids.

Male identity may have been tied to the barrow itself; comparatively female identities seem more related to artefacts.

As described in chapter 8, adult males may have had different risks in their lives, perhaps related to the activities undertaken by a particular age group. Alternatively to central burial position equalling status, where men are the earliest burials they may be related to the founding of the site an individual perhaps seen as a 'gateway ancestor' with numerous descendents both real or relational which leads them to being remembered in folk histories for which mortuary sites are a focus.

## **Chapter 13: Women and children in the Early Bronze Age**

### *13.1 Introduction*

Previous work on identities in the Bronze Age has focussed on adult males. Bronze Age women have generally been discussed with relation to their male relatives; often they have only been deemed status worthy through their male relatives; through marriage or inheritance (Gilman 1981; Brodie 1997). Children have likewise only really been discussed in relation to adults (Sofaer 2000).

Within the study there is a total of 48 inhumed females and 29 cremated females. Of these female individuals, 7 had cribra orbitalia (16%), 12 had LEH (37%) and 9 had periodontal disease (28%). There were 7 inhumed individuals of biological adolescent age and 10 cremated; there were 27 inhumed juveniles (younger than 12 years old) and 22 cremated. For details on artefact associations see tables 13-15.

In Chapter 8 it was concluded that women seem to have lived longer despite having a higher prevalence of malnutrition than men, which may indicate that they acquired status with age. Women were also more commonly associated with artefacts than men; artefacts may be more tied to a woman's identity. Children and adolescents are also represented in both the cremation and inhumation samples but were less often associated with objects. The discussion of women and children is brought together in this chapter for convenience rather than assumptions in biological and social links between the two.

### *13.2 Childhood: from infancy through adolescence?*

The study of childhood in archaeology has been relatively recent; the various assumptions of the state of childhood in the past have been criticised as projections of our own modern society. When children are not ignored they are usually seen as passive, dependent, incomplete or incompetent (Lillehammer 1989; Baxter 2005, 18; Montgomery 2009, 44). Joyce (1999) discusses how child burials in Pre-Classic Mesoamerica had a great number of artefacts; Joyce interprets this as a reflection of the importance of offspring in linking families.

Sofaer (2000, 7) discusses the problems in our assumptions of the kinds of material culture associated with children which are interpreted through reference to adults. When miniature objects are found with child burials they have been interpreted as

toys (Gibson 2004; also see chapter 2). Where children are found buried with weapons it is assumed they were too young to have earned the right to these objects and therefore the artefacts must have been placed there as symbols of inherited status (Pader 1982; Crawford 1991; Härke 1990, 1992). These interpretations impose modern western values onto child burials with modern notions of extended childhood. Alternatively, objects have been demonstrated to have been used by children in learning craft production activities including flint-knapping, potting and weaving (Kamp 2001b, 427). Material culture has also been shown to mark thresholds in transitions from childhood to adulthood (Crawford 2000).

As discussed in Chapter 4, childhood is an important time in the formation of identity and learning processes (Kamp 2001a, 2). There is considerable variation in the definition of childhood in both past and different cultures. For example, Anglo-Saxon documents demonstrate that the age of adulthood in the 7<sup>th</sup> century began at the age of 10 (Crawford 1991). Our modern definition of childhood has developed since the work of the 19<sup>th</sup> Century reformers and from the educational categories which followed later (Kamp 2001a, 4). These examples demonstrate how it is likely that children in the past were perceived differently than in modern society, where age groups are categorised chronologically.

Adolescence in modern society can imply an extended childhood and the transition into adulthood but it remains unclear whether this is a stage which is applicable cross-culturally and throughout time. Although osteological age categorisation associates these individuals with the labels 'child' or 'adolescent' as they are implicit in our society, these terms relate to biology not sociology, anthropology or culture. Montgomery (2009, 3) discusses the varied cultural definitions of the child and concludes that there is no way to define a child universally as the concept must be defined in its own context. Cross-culturally, definitions of childhood vary, in many pre-literate societies it is the stages of maturation that are recognised, rather than chronological age (Kamp 2001a, 4). Cultural and economic differences in past societies would have made their own demands of different age groups depending on how society was structured. Ethnographic evidence from traditional and modern societies indicates that children can contribute significantly to social and economic life (Sofaer 2000, 11). Kamp (2001a, 15) discusses the contributions of child labour to agricultural



and pastoral societies. For example, children in Polynesia were expected to take on a variety of chores including the care of younger children.

From past studies of childhood in anthropology and archaeology it is possible to show that children in some societies may have been viewed as young adults; when does childhood end?

Within this study age has been assessed from morphological changes to the skeleton and dentition; this has resulted in age placed within biological age ranges. Halcrow and Tayles (2008, 200) discuss attempts to use social age categories in bioarchaeological analyses. Social age categories are however, culturally constructed relative to the society. Different groups will have their own definitions of childhood (Kamp 2001a, 25). As discussed in introduction to part 4, social age grades might be accessible through multiple strands of evidence.

#### 13.2.1 *Children in Bronze Age studies*

Children have generally been ignored in studies of the Bronze Age: this is despite their obvious existence in burial mounds. In Greenwell's study there were 81 identified children (compared with 124 identified adult males and 63 identified adult females). Healy and Harding's (2007, 56) study of burials in round barrows in the south-east Midlands and east Anglia revealed that children accounted for 36 out of 126 individuals buried in the round barrows of that region.

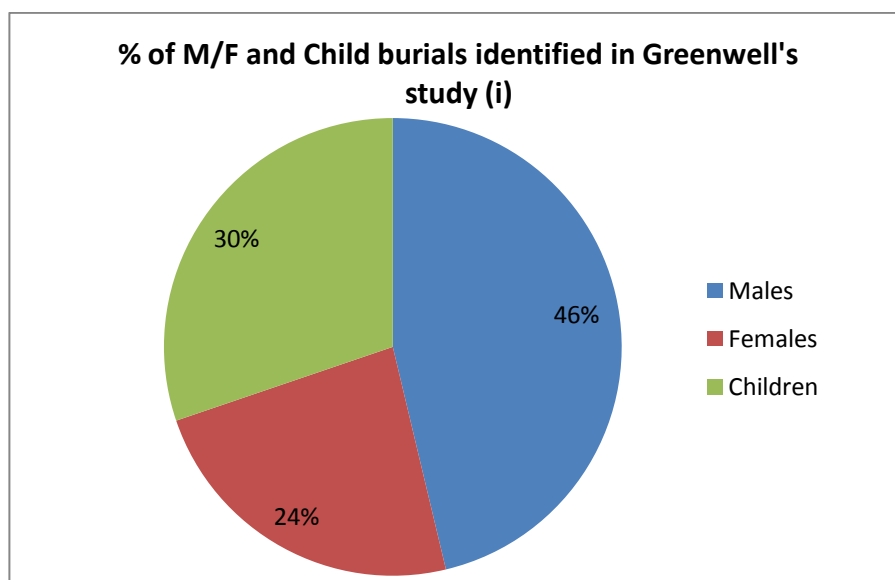


Figure 125: the percentage of identified adult males and females and children in Greenwell's study

In Bronze Age Ireland, child burials are thought to have attained ‘full burial rites’ at age 14 (Kamp 2001a). In Scotland, child burials are most often associated with adults, when they are buried alone they are buried like adults as at Catterline, Kincardine and Deeside (Small et al. 1988). Small et al. (1988, 75) discuss how child burials are most often buried with adult females as at Nether Criggie, Dunnottar. However these examples are all beaker burials.

There are 76 juvenile burials at 35 barrow sites among the infant to adolescent inhumation burials from the Yorkshire barrow groups in Kinnes and Longworth (1985). The majority of these were described as ‘child’ and were buried as single deposits (see appendix 16.11). Adolescent individuals were all buried singly unless they accompanied a child or infant. Only 10 burials were of an adult and child; male and female adults were both equally likely to accompany juveniles. Multiples of child burials were rare, but included two examples of a child and adolescent, one burial of an infant and child and, three other burials with multiple children.

Age	Number
Infant	12
Child	43
Adolescent	16

Table 66: Number of individual burials of each age group

These burials were undisturbed and not associated with beakers. Of the 74 burials only 15 were associated with artefacts, pottery being the most common grave-good.

Artefacts	Pottery	Knife	Bone pin	Misc flint	Arrowhead	Jewellery
Infant	3	0	1	0	0	0
Child	5	1	1	2	1	0
Adolescent	0	0	0	0	0	1

Table 67: The number of object types associated with different age groups in Kinnes and Longworth 1985.

Out of these burials two were different and interesting in their artefact associations. Firstly, an infant burial at Ganton 16 was associated with a bone pin which was placed behind the head, as is common when these are found with adults. Infant individuals

are rarely found with objects, when artefacts are associated with infants they are usually pots. It is possible however, that the bone pin was used to fasten a shroud. The second of the aforementioned burials is the only adolescent individual out of the 16 in this review was associated with grave-goods. This adolescent female was found with an elaborate jet necklace of 124 disc beads and 1 pendant. As discussed in chapter 6, it is rare for large amounts of whole necklaces of jet to be found (Frieman 2012). The association of this young female with this necklace contrasts with the pattern of older adult females with grave-goods (as discussed in chapter 8). Even though this is only a small number of juvenile burials, it can be seen that the majority of child burials in the East Riding of Yorkshire were buried singly and therefore were not particularly differentiated from adult burials. Adolescent individuals in this area however are at times associated with the remains of children in the same way that adults may be.

### 13.2.2 Osteoarchaeological evidence

Within the inhumation sample of this study, there are 26 juveniles (from infant age to 12 years) and seven adolescent individuals. The infant and child individuals make up 12.8 % of the inhumation sample. Within the cremation sample there are 22 juvenile individuals and 10 adolescents; the juveniles make up 17% of the cremation sample.

Age	Inhumation	Cremation
infant	15	8
child	11	14
12 to 16	7	10

Table 68: the number of juvenile individuals from this study

At Aglionby, Cumbria, infants and children are buried in the same deposit as adults in five out of eight deposits, by contrast, further south at Brackenber, an infant was buried alone (see chapter 8). The Aglionby pattern is most common to the cremation burials in Cumbria, with adolescents being buried alone.

In Lancashire juvenile cremation deposits are most often buried alone, while in Cheshire there is no clear differentiation, different age groups are at times deposited together (see appendix 16.3).

While these are examples of cremations which it could be argued were deposited together for convenience; examples of inhumations where children and adults are buried together are also found in the inhumation sample. The most obvious example is at Hindlow, Derbyshire where three adult males were associated with child remains (see chapter 11.1). At Green Howe infants, children and adolescents are buried alone. In the rest of the Yorkshire sample there are only six juveniles, four of which are buried singly and two are associated with adult males. From the review of other Yorkshire sites (above) it seems it was most common in Yorkshire for infants and children to be buried alone.

It is possible that single or accompanied burial of juveniles may indicate differences in social age in different areas however a larger sample would be required to take this further. However, there remains a glimpse of different regional burial practices associated with certain age groups which might indicate cultural ideals of age.

Of the juveniles in the inhumation sample only four (15%) of 22 individuals were associated with objects, these were all young and older children aged from three to 12 years. The majority of the child burials in the inhumation sample were neonates and infants; none of these were associated with grave goods. These neonates and infants were all from Derbyshire, except for two at Cowlam, Yorkshire. There were not enough adolescents within the sample to be significant.

Age	Number	With objects
Child	22	4
Adolescent	2	2

Table 69: The number of juvenile individuals from the inhumation sample with grave-goods.

Within the cremation sample it is not as clear whether juveniles are associated with objects as these individuals are often accompanied with adults. Four individuals were deposited singly were associated with objects within the cremation sample. Again, a larger sample of cremated juvenile burials would be required to access any patterns in burials of this age.

Site and burial	Age group	Objects
Whitelow A	Child	Flint knife
Green Howe (10)	Adolescent	Pot, flint, flint knife
Herd Howe	Child	Collared urn
Kelsall	Older child (5-8)	Collared urn, boars tusk, bronze fragment

Table 70: singly deposited cremated juveniles with objects

#### 13.2.4 *Social age of children*

Social age grades of childhood in the Early Bronze Age are not particularly visible. Within this study the burials of young infants and children are as often disturbed as they are accompanied by adults. Burials of individuals who are biologically adolescent might have been seen as young adults as they have at times been buried in association with young children.

Within the inhumation sample, the burials of children were rarely differentiated from those of adults; does this mean that children were seen as small adults in this society? As most inhumed juvenile burials appear to have been buried singly, it can be said that often children were seen as social individuals with similar kinds of social connections and aspects of identity as adults. Children's aspects of identity would necessarily be more flexible as they were still forming when these individuals died.

Where grave-goods are present with juvenile burials they are more commonly associated with children (age 3-12) and less associated with infants. Child burials in other periods have been discussed as liminal in relation to the burial site or burial practice (Finlay 2000; Moore 2009) and from this and ethnographic beliefs it is often assumed that extremely young children from neonate to infant age would be seen as not being people. It is possible that infants in the Early Bronze Age were seen as different from other age groups; the rarity of their associations with objects in the inhumation sample could mean that it was not appropriate for grave-goods to be deposited with individuals of such a young age, or that connections of identity were not yet strong enough to be visually suggested in burial.

#### 13.3 *Women in the Bronze Age*

Women in archaeological studies have usually been in the background; with men most often interpreted to be chiefs, leaders, and warriors (Clarke et al. 1985; Shennan 1982). This section explores the possible identities and roles of women in the Early

Bronze Age. Previously assumed identities of women in the Early Bronze Age include wives, potters, and relatives of powerful chiefs. Early Bronze Age women have often been relegated to being a commodity, viewed through their worth as links with other groups (and therefore trade) this means women in the Early Bronze Age have been interpreted without agency or individualism.

#### 13.3.1 *Woman as gatherers, hunters or farmers?*

Women have traditionally been assumed to have been gatherers and providers of food staples. As discussed in chapter 4, women in some societies also hunt. Women within anthropological groups are often the providers of the majority of staple food sources. The roles of women's contributions vary in different societies, Agta women prefer to hunt and trade rather than to gather; Eskimo women sew; Australian Aborigines provide most food by gathering (Dahlberg 1981, 14). Maasai women in the past were documented as pastoralists, involved in the care and management of milk and livestock (Hodgson 2004, 31).

While it has been thought that agriculture was implemented in the Early Neolithic and thus well established by the Early Bronze Age (Rowley-Conway 2004) there has been some debate over whether Neolithic agriculture was successful (Stevens and Fuller 2012). Others have emphasised the role of pastoralism along with some hunting and gathering with less reliance on cereals (Thomas 1999). Early Bronze Age groups may not have relied completely on agriculture.

In the British Bronze Age, the lack of settlement evidence limits our knowledge of gathering and cultivation practices; due to how charred organic remains are preserved these are more likely to be biased towards items such as hazelnut shells (Rowley-Conway 2004). The gathering of pignut-tubers is evidenced from Barrow Hills, but as these were found in a mortuary context it could not be proven they were gathered as a food (Moffett 1991). Animal remains which have been found at Bronze Age sites indicate that pigs, sheep/goats and cattle would have been kept as food sources (Roberts and Cox 2003, 77).

Animal bones were also commonly included with both inhumation and cremation burials. At Woodhouse End, Cheshire, the cremated remains of an adult female and a child were associated with part of a juvenile pig radius. Another cremation deposit

from this site included the skull and foot bones of a dog. In both these burials the animal remains had also been through the cremation pyre with the person.

Fish vertebrae are at times associated with Early Bronze Age burials; these seem to have been used as beads at Whitelow, Lancashire and Langton 2, Yorkshire. From this burial evidence it seems likely that some fish were also used for food. The examples of burials with fish vertebrae in the study are from burials of adult women.

As discussed in chapter 8, women are not usually associated with axes or daggers but are at times associated with flint knives and arrowheads which are likely to be associated with hunting. At Cowlam 57 an older adult female was associated with an arrowhead which was found near the hips. Adult females from the Goodmanham barrows were often associated with flint scrapers which may indicate an association with hide-working and butchery processes (Donahue 1999, 101).

While these different aspects of Bronze Age subsistence do not add up to strong evidence of a singular role for women, it seems likely that whole groups would have taken part in such activities and their success, failure or adaptability in these roles would have contributed to their groups identities and reputations.

### 13.3.2 *Women as craftspeople*

Within the literature women have often been thought to be craftspeople. Brodie (1997) discussed Bronze Age women as potters and this was interpreted as a skill which added to their value in marriage exchange. Budden and Sofaer (2009) discuss potters through non-discursive knowledge; skill is acquired cumulatively through instinct, doing and performance. Budden and Sofaer (2009, 2) argue that identity has been accessed through artefacts and individuals, for example were metalworkers are identified through specific assemblages of objects. Such assemblages are argued to represent the end point of identity formation. Budden and Sofaer analyse pottery from domestic contexts at the Bronze Age tell Százhalombatta, Hungary in order to explore the formation of potters through non-discursive knowledge.

The acquisition of a skill through repeated techniques, results in a group of physiological actions which change the neurology, musculature and skeleton of the individual (Sofaer 2006a). From this it is argued that the acquisition of skills is not only about the production of objects but also production of the self and identity (Budden

and Sofaer 2009, 6). They find differences in skill of the potters which is interpreted as part of the social creation of potters, where pots were created in front of other people who would have passed on knowledge of the potter's identity (Budden and Sofaer 2009, 11).

Archaeologists have usually assumed that pots and other objects were made by one person. Contrastingly, both ethnographic and archaeological evidence indicate a more collaborative approach to pottery making from childhood onwards (Crown 2007, 677). Also in the process of bead making genders may be segregated into different parts of the process, for example among the Nupe in Bida. This segregation at times depends on the type of material used (Sciama 1998, 6).

Gero (1991, 170) criticises the androcentric approaches to the study of lithics and contends that women in the past would have made their own tools for whatever tasks they were carrying out. It can also be seen though historic and ethnological accounts that women in societies such as Australian aborigines and Tiwi made stone tools.

Generally, flint flakes within the sample are more common in male burials but are also found in female burials. Flint scrapers are just as common in female and male burials. Within this study and generally in Early Bronze Age literature, bronze awls are most often associated with adult women. This may be some symbolic indication of a gendered activity. Awls would have been used for punching holes in leather. Spector (1991) gives a narrative description of a girl's use of an awl in a Sioux group. The awl handle was used as a record of her accomplishments and learning which she carried so others could see her skill (Spector 1991, 25). Awls with tangs are known in Europe; within the UK these are known from Manton Barrow, Wiltshire and were probably attached to wooden handles (Cunnington 1908).

Artefacts may have been representative of accomplishments and may have different uses and meanings, for example, beads may be used to beautify the body and for self expression. Beads may be used in patterns in different societies in order to signify social and kin links (Sciama 1998, 17). Janowski (1998) demonstrates how the possession of ancient beads associated with ancestors gives status and continuity of genealogical lines. This connects with Woodward's (2002) interpretation of Bronze Age amber beads. Beads are also used to demonstrate clan identity among the African



Kalabari (Eicher 1998, 95). Beads may indicate both individual and group identity in a number of different cultures.

The wearing of jewellery in some societies is to do with ritual; the materials which beads are made of may have qualities for fertility and health. Beads are associated with reproduction in many different cultures. Beads are also often created from natural items such as cowrie shells which throughout the Mediterranean and North Africa have been associated with the evil eye; beads may be used as apotropaic objects (Sciama 1998, 15).

In the Early Bronze Age jet beads were likely to have been made using flint saws for cutting and abrasion. For the perforation of the beads, bronze awls would not have been strong enough, instead solid bronze bits or bow drills may have been used (Sheridan and Davis 2002).

In relating these uses of beads to those found with Bronze Age burials, beads may have been used for self expression. The maker of beads may also have been the one to wear them; alternatively they could have changed hands as part of social or cultural exchanges and relations. The number and type of beads or bead-like objects with burials varies and this might indicate a personal choice.

### 13.3.3 *Women as leaders? Women as agents of social change*

The past discussion of Bronze Age hierarchies has been androcentric (see chapter 12) it may be worth considering whether women had such roles. However even if women were not 'leaders', certain individuals are likely to have had influence in different ways. Women may have been agents of social change.

Some researchers have discussed how women may have moved between groups (marriage brought out of the group) for social alliances or their skills (Brodie 1994). Recent DNA research reveals that women in the Bronze Age were more likely to move between groups for marriage or other reasons (Brown 2012). This would mean that women came into different groups with knowledge of different groups and areas, with different traditions and perhaps language. Women would have provided kinship links between groups and would have known where to trade to gain certain objects or how to solve problems between groups.

Bronze Age burials and associated grave-goods in Europe are different and perhaps more structured than in Early Bronze Age Britain (Sofaer Derevenski 2000). Social control of women in eastern, northern and especially central Europe can be seen in the elaborate and heavy leg rings which were linked with a chain. These would have limited the movement of the women wearing them and from the osteoarchaeological evidence of women who were killed in a fortified settlement at Wicina, Poland; these appear to have been worn on a daily basis (Sørensen 1997, 108). While there is no evidence of such movement limiting adornments in the British Early Bronze Age, this is particularly thought provoking to the social roles of women in different groups in the past. Whether women were individuals who were under a great deal of stricture or those who may have been leaders in their own right, either way women would have had their own influence through groups as a whole, in their own families or amongst other women.

In the previous section on women as craftspeople, the properties and uses of objects such as awls and beads was discussed. If variation in bead assemblages indicates differences in self expression and group affiliations, those rarer necklaces of jet may indicate something different. Those jet necklaces which survive complete or near complete seem less individualised and may instead be associated with conformity and ideology. These necklaces are thought to be most often associated with female burials (Sheridan and Davis 2002). Although a jet necklace found at Burgie Lodge was with a skeleton which was thought to have been a man; the human remains were lost so this cannot be verified (Callander 1916).

These elaborate pieces of jewellery may have been symbols of leadership, or of individuals who had a symbolic role. Such necklaces may have been part of a rite of passage not yet reached when those individuals died, or a symbol of the groups to which they belonged.

The osteological evidence from this study indicates that generally (especially in the east riding of Yorkshire) women were living longer than men. This could mean that, as they became older, women were more likely to become leaders as there may have been less men surviving from their age group. The knowledge gained through the lifecourse would have been a useful resource and may have added to age-status.

Archaeologically, status might be seen in artefacts, elaborateness of burial and health. The increased survival of women may indicate better health at an older age (once childbirth has been survived).

Older females are mentioned by Sørensen (1997) as having increased status in Late Bronze Age North Germany. Hodgson (2004, 26) discusses how in Maasai society, age and gender were the key axes of social organisation in the late 1800s. Women gained respect as they got older, especially when male children became warriors or were married. The mother had authority over the son's wife, as the family grew and expanded the older female became a matriarch (Hodgson 2004, 31).

An example of an unusual female burial is at Langton Wold 2. This is a probable adult female aged around 40-50 who was buried with 3 bronze awls, 2 bone instruments (1 boars tusk, 1 beaver tooth), a flat circular jet bead, a pierced nerita, a belemnite, a fish vertebra and three cowrie shells. The objects are described as being positioned near the waist and were found in a way which suggests they were in a leather bag. One of the bone implements was worn, one appeared new. This individual was above the old surface between two layers of chalk slabs in a charcoal-rich matrix (Kinnes and Longworth 1985, 32). While the number of objects associated with this individual does not necessarily indicate status or leadership, the collection of objects along with the containment of the body within chalk and the age of the individual may tie in with age status as discussed in chapter 8.

While the evidence for both male and female burials does not provide conclusive evidence for leaders, it seems likely from both osteological and archaeological evidence in the study that women acquired status with age and presumably the achievements which came over a lifetime as well as the potential status through knowledge of other groups and kin networks.

#### 13.3.4 *Women as mothers, grandmothers and family centres*

Family relationships are little discussed in prehistory. According to Dahlberg (1981, 20) many have previously based the low status of women on motherhood, as in western society being a mother is seen to hinder and limit a woman (Bolen 1992). Anthropologists such as Leibowitz (1986) and Brown (1970) saw childcare as

something which limited women's ability to carry out other activities. However it has also been demonstrated that in foraging groups such as the Agta and Mbuti, women restrict their usual work for only a few days after childbirth (Dahlberg 1981, 21). Mothering has also been seen to lack value in comparison to the assumed activities of men. In some societies such as the Uduk, motherhood and childbearing are considered to be the highest of achievements (Sciama 1998, 18).

There is a contrast in birthing which is biologically female and mothering which is social and is not limited to women (Bolen 1992, 50; Hird 2007, 1). Becoming a mother may lead to changes in a woman's sense of self and identity. There may be psychological impacts on the mother as well as possible affects to physical health. Pregnancy, birth and nurture of children can potentially cause malnutrition to both mother and child. After birth, both may be vulnerable to infection (Randsjö-Arvison et al. 1998).

Beausang (2000, 73) discusses mothering as a practice where the mother is trained through the senses which build a pattern of behaviour. Bolen (1992, 54) examines how our modern constructions of motherhood may not apply to prehistory where children may have had other care-takers, including other women, older children and even men. In Malawi grandmothers have an important role in assisting new mothers with looking after the infant and are influential about decisions made regarding children (Bezner Kerr et al. 2008).

Marks of parturition on the pelvic bones have in the past been thought to be indicative of childbirth, however, a study by Adams Holt (2005) demonstrated that women who had not had children could also have parturition scarring for other reasons such as inflammatory pelvic problems; also women who have given birth do not always have scarring. So parturition marks are not a reliable indicator of childbirth. Within this study there were not enough complete pelvic bones for this to be studied.

Archaeologically, burials of adults and children are often found; it is rare for neonate skeletons to be found in the mother's pelvis. While not being direct evidence of parenting or kinship, the multiple burials of adults and children may give us a glimpse of the relationships between different age groups in the past.

The majority of inhumation burials with children in the study are men, in the cremation sample only burials of women are associated with children; however the number of such adult and child burials is too small for this to be a definite pattern. As discussed above in relation to child burials in a larger number of Yorkshire burials, males and females were equally likely to be buried with children.

Within the inhumation sample, an adult female aged 45 or more at Willerby Wold 34 was associated with the remains of two children and an adolescent: one under 12 years, one under 20 and a child aged about four. The adolescent was positioned behind the adult female and the 12 year old was placed behind the adolescent and their heads were close together. The right hand of the four year old child was close to the face of the adult, the arms and knees were on the right arm of the adult. The knees of the adult were laid a little over the knees of the adolescent; the youngest child was placed between the knees and face of the adult (Greenwell and Rolleston 1877, 183).

Events relating to life and death would have been understood through the ways in which they occurred on a regular basis in the past. The association of women and their ability to give birth would have given them importance in the continuation and success of the group.

While we have no evidence for the act of mothering, burials such as that at Willerby Wold 34 create evocative images of the possible relationships mothers and children.

#### *13.3.5 Female social age groups: women young and old*

As discussed at the beginning of part 4, the determination of significant social age groups may be of use in determining identities. Of the adult female biological age groups in the east inhumation sample 20% were aged 16-25, 28% at 30-40 and 27% at 40-50. The number of older adult female burials which were surviving longer than men, along with the increased likelihood of artefact associations for older females seems to hint at elder adult females as a social age grade and a dominant identity in the east sample.

Age	Total individuals	Total artefacts
16-25	12	8
25-30	2	4
30-40	14	3
40-50	12	11
50+	8	11

Table 71: number of adult females in each age group and number of artefacts (i)

Sites with multiple older females include: Cowlam 3 and Cowlam 57; other barrow groups with a number of older females also include Willerby Wold, Rudstone and Goodmanham. The majority of these burials are also individual burials with only the two Willerby Wold burials and one at Cowlam 57 accompanying other individuals.

A number of very young adult females are also apparent. Of these one has already been discussed (Folkton 71) another interesting burial of a young adult female is from Goodmanham 115, while there is little we can say from the remains of her skull, she was associated with a food vessel, bronze earrings and a bronze awl. The earrings were found positioned as if they were being worn for burial, the awl was behind the head (as is common for bone pins) this may have been used to pin this individual's hair, the food vessel was in front of the face. More interestingly within the Goodmanham barrows 111-113 there is a majority of adult females with seven out of ten being female. The female individuals are aged 18-45. Six of these adult females also have grave-goods.

These examples along with the general results in Chapter 8 demonstrate how the burials of adult women in the Early Bronze Age are at times differentiated from those of male burials through artefact associations. Within the burials of adult females, those at the extremes of early and late female adulthood seem to be marked out with the most significance. Because of their knowledge of things which have been passed down and past events, older females would know of the rituals and other traditions which were significant in each society. Younger women would have been significant in their potential; this would have especially been the case if these women were yet to take part in marriage outside of the group. This may have been similar to the possible high death status of young adult males.

Individuals who died before such inter-group connections could take place would have been part of elaborate displays as while their loss would have been strongly felt,

efforts at maintaining and continuing social connections and displays of group solidarity would have also been important.

#### *13.4 Conclusion*

The most visible female identity which can be seen in the study is that of older women. While the burials of women and children were less numerous than those of adult males, they still form a significant portion of the burial evidence. The burials of adult women are often more complex in the range of objects which accompany them.

Thinking about the roles of women in these societies is difficult, probably because the majority of previous studies considering Early Bronze Age social structure have focussed on men when they discussed the roles of people at all.

Exploration of the possible roles of women in the Bronze Age result in a variety of possibilities, women are likely to have taken part in most of the same activities as men. Subsistence activities, producing tools and crafting various objects are all likely past-times for men, women and also children. Alternative female identities which have been explored include motherhood, leadership and elder.

The burial of women with elaborate objects such as jet necklaces may have been associated with a symbolic aspect of a female role as some artefacts with males may only have been symbolic of warfare. It is possible to see from some burials that female individuals were as important in the creation of group identities through the formation of site histories as men. However the greater number of female burials with artefacts may not relate to 'status' as this is usually defined, through wealth or access to rare objects, but instead to women having different connections, perhaps with the birth group. Men are contrastingly more connected to burial places.

The identities of children are harder to access, partially because there are less of them in the study and also partially due to the lack of detailed description of burial context in the literature. The remains of juvenile individuals are also more likely to have become fragmented or missed during antiquarian excavations.

Socially children in the Bronze Age often seem to have often been buried in the same way as adults. What we class biologically as adolescents were also usually buried singly and seem to have been less often associated with grave-goods. There are fewer adolescents than other (biological) age groups, this might be due to these individuals

being more likely to survive or those in the literature which are older adolescents may have been identified as adults.

There is some possible differentiation between juveniles of infant age and children aged 3-4 and above, infants are less often associated with grave-goods than the older children. Adolescents are also less often associated with objects until the later years of biological adolescence when they are likely to have been seen as young adults. The lack of objects with infants and younger adolescents perhaps hints at transitional states in the identities of these individuals.



## **Chapter 14: Moving forward in Bronze Age mortuary studies and beyond**

### *14.1 Introduction*

The project has sought to answer questions on the mortuary practices, demography and identities in Early Bronze Age northern England using osteoarchaeological data. Issues which have been raised in the results and discussions have included: the increased object associations with women and older individuals, the greater percentage of women reaching older age, differences in the health of males and females, and a lack of evidence for previously postulated stereotypical male identities. New evidence points towards the importance of women and children in Early Bronze Age communities; these do not supersede men within these groups but it is likely that most activities were carried out at least to an extent by all age and sex groups. This chapter will explore how these questions were answered and what aspects of the research could be taken further.

### *14.2 The integration of archaeology and osteology in mortuary studies*

In the past it has been rare for osteological and archaeological evidence to be brought together due to differences in approaches and the resulting lack of agreement in the use of methods and theory (Sofaer 2006a, b). This project has used and interpreted both osteological and archaeological burial evidence with attempt to avoid the problems found in both. Whether this has been successful is debateable, there are difficulties in any multi-disciplinary approach and no doubt at times there may be gaps left between techniques and aspects which might be less accessible to the non-specialist.

Despite possible issues or limitations in these approaches, the project has led to new discoveries which demonstrate the potential of bringing together archaeological and osteological data with theoretical interpretations.

### *14.3 The demographics of Early Bronze Age burials*

One of the main themes of past studies of the Early Bronze Age was the predominance of male burials and the presumed status of such individuals. This led to the exploration of demography through osteological the evidence in this study. In Chapter

8 the demographic results revealed that while the remains of women and children are present within Early Bronze Age burial mounds, the burials of adult men are more common. An exploration of Greenwell's data (Greenwell and Rolleston 1877) showed the higher number of male individuals is not due to any bias. If round barrows and cairns were a preferred place for the burials of men does this mean that other individuals were buried in flat cemeteries or caves? Human remains in caves are unfortunately less easy to associate with a particular period due to different stratigraphic and taphonomic processes which occur at these sites (Leach 2008). Early Bronze Age flat cemeteries are also less often found or discussed which perhaps has also biased our interpretations.

In contrast to the inhumation sample, the sex estimation of the cremated remains reveals a higher number of adult females, unfortunately as 60% of the cremations were not assessable for sex it is likely that this is not a genuine pattern. The process of cremation also causes shrinkage of the bones which may also bias assessment towards females.

The demographic part of the study has also revealed new evidence which shows that adult women were living longer than men, and that women and older individuals were also more likely to be associated with grave-goods.

#### *14.4 Reasons for different burial practices*

In chapter 5, different burial practices and mortuary site formations were reviewed. This revealed a variety of site structures, sequences and differences in burials. Common within these different practices and sites however was a concern with the containment or wrapping of the dead. This was achieved in the Bronze Age through the wrapping of the corpse in cloth, leather, wood and stone, before further containment took place into the burial mounds through the use of pits and, at times, layers of materials such as stone, clay and soil.

The results of analysis of burial patterns in chapter 10 continue these themes. Burials whether they were inhumed or cremated followed a sequence of preparation, wrapping and deposition. Aside from chronological changes; difference in burial practices is likely to be a result of traditions which were followed in different areas

(see also chapter 11) as well as more complex possible interpretations related to varied identities which are associated with different sites.

The placement of burials in particular areas is at times remembered as these burials are returned to and either disturbed or renewed in the deposition of later burials. Although simple binary opposites of similarity and difference are best avoided, central and outside areas of sites may have been important. Central burials were not always the earliest but at times may have been related to dominant identities and places which were remembered. This is seen in the re-use of central large grave-pits especially common to Yorkshire (as at Green Howe). Multiple burials or reused areas may relate to memory of folk histories, over short and long time periods. These would have functioned as affirmations and negations of different groups or memories of individuals. While these patterns may not explain the reasons for different burial practices or choices, they may contribute to some variations seen in particular areas as well as the occasional burials which are exceptions to chronological patterns.

#### *14.5 Regional differences*

Much potential remains for the further exploration for differences in site formations, use and chronology in different areas of northern England and beyond. This study has succeeded in picking out different site histories and individual biographies which may be compared. Also different regional patterns in the age and sex groups represented in both inhumation and cremation were seen in Chapter 8, some of the regions would have benefited from larger samples however (such as the North group/Cumbria).

Variation in structures form the most obvious regional difference; for example, in Lancashire flat sites such as ring works are quite common, in the East group large pits are common within round barrows and the earliest burials are often carried out prior to the construction of the mounds.

#### *14.6 The significance of artefacts in our understanding of past people*

Artefacts are important not only in how they were made and used, but in what they can tell us in burial contexts. While this study only looked at basic artefact associations rather than in depth artefact analysis, some patterns are revealed in relation to demography.

Women were more likely to be associated with artefacts in both the inhumation and cremation samples. This seems to indicate that women's identities were more tied to objects, and often things which were worn on the body. Artefacts associated with men were more often items which would be held in the hands (Lucas 1996). The placement of grave-goods with inhumations shows a preference towards placing objects around the head, and especially near the face. This may be interpreted as indicating the importance of the head and face; perhaps there was a need to preserve the face of the dead, or the head was generally an important symbol of the person as they had been during life. This can also be seen at Folkton 71 where an older adult male was buried with chalk slabs positioned around his head protectively (Greenwell and Rolleston 1877, 271).

Object analysis has also shown that a wide range of different kinds of artefacts were buried with males, females and children of different ages. The only items which appear to have been specific to particular gender identities were axes and bronze daggers with men and bronze awls with women.

#### *14.7 The accessibility of identities in the past*

Ways of accessing identities were discussed in Chapters 4 and 7. Identities were explored through site case studies, individual case studies and also chapters 12 and 13. Processes of life histories and burial rites were used to create histories and narratives of individuals and burial sites. Chapter 4 showed how identities are not simply formed or defined and are likely to be complex, fluid and multi-layered. Identities were accessed through the processes of life, death and burial.

Chapters 12 and 13 discussed identities for men, women and children; these included those which have been discussed in the past, and other potential identities which could be explored further. These two chapters were also used to explore the idea of social age groups, and if these could be seen in the study. Men in the Early Bronze Age had previously been interpreted with status seen through modern viewpoints. The social age groups which seem apparent in both men and women are those of young adults and older adults. The young adult male group includes individuals from the late teens into the twenties whilst the young adult females are especially young and only just into biological adulthood. This along with evidence from patterns of

grave-goods indicates apparent gendered differences between the biological age that men and women make a transition. An anthropological parallel of a similar difference in the biological age of transition can be seen in the Maasai where young adult women become wives while young adult males become warriors (Hodgson 1999)

Adult males may have been more associated with round barrow sites, whilst females were may have been more flexible, carrying some aspects of their identities symbolised through their belongings.

Something which has become apparent through these discussions is that there are various kinds of status which may have been differentiated and that when we discuss status we should be specific as to what status is based on. The kinds of status discussed included older age, health, and youth.

A new part of identity which has been considered is that of family structures and roles. While this is an ephemeral aspect of identity in prehistory, it demonstrates that there would have been more to roles and social structures in past groups than we often assume. Different roles such as those of family and kin-groups need to be considered if we wish to increase the scope for our interpretations of past peoples.

#### *14.8 Recommendations for future research*

While this research has revealed new and different aspects of demography, burial, health and identity in the Early Bronze Age, there are still a great number of mortuary sites and burials to be investigated. Regional differences and chronologies need further radiocarbon analysis to increase our understanding of how these sites fit in with those which have already been dated, and, how burial practices alter over time.

Further analysis of health and trauma in the Early Bronze Age would add further information to the differences in male and female health seen in chapter 9. Analysis of diet through stable carbon and nitrogen isotopes (which was beyond the scope of this study) would also be a way to integrate questions of how diet might have been differentiated between different age and sex groups.

The study of osteoarthritis and Musculoskeletal Stress Markers in Early Bronze Age needs to be investigated with a larger sample of post-cranial skeletons than it was possible to access during the course of this project. These pathologies could be revealing in comparison with associated grave-goods.

Early Bronze Age child burials require further investigation in order to see any definite patterns in associations with other burials and with grave-goods.

The methodology for accessing identity and bringing together osteological and archaeological evidence could also be used to explore other periods and would be even more revealing on historic remains.

#### *14.9 Conclusion*

Overall this research has brought together archaeological burial data and osteological evidence and been successful in answering questions on demography, health and burial practices. This approach has been revealing and thought provoking in the results it has given which were for the most part different from previous studies.

A large part of the idea of accessing the identities of Early Bronze Age groups developed from a wish to bring the human element into this research. Instead of distancing them as just bodies or making them into objects, they should be seen as individuals with complex histories. Hopefully this can be seen in the osteobiographies and also the site case studies, these also show how individuals had multi-layered identities with different connections which led them to be buried in these places.

## 15. References

1939. Unrecorded Bronze Age vessels from the tumulus, Glead Hill Cob, Houndslow, Cheshire. *Journal of the Chester Archaeological Society* 33, 45-88.
1952. Urn found at Kelsall. *Journal of the Chester and North Wales Architecture, Archaeology and History Society* 39, 110.
1963. *Noon Hill*. *Journal of the Bolton and District Archaeological Society* 1 4-8.
1976. Excavation reports and sites observed. *Cheshire Archaeological Bulletin* 4 21-39.
- Abercromby, J. 1902. The oldest Bronze Age ceramic type in Britain. *Journal of the Royal Anthropological Institute* 32 373-97.
- Adams Holt, C. 2005. A re-examination of parturition scars on the human female pelvis. *American Journal of Physical Anthropology* 49 (1) 91-94.
- Agarwal, S.C. and Glencross, S.C. 2011. Building a social bioarchaeology, in S.C. Agarwal and Glencross (eds) *Social Bioarchaeology*. Cambridge: Cambridge University Press, 1-11.
- Aitken, M.J. 1990. *Science based dating in Archaeology*. London: Longman.
- AlQahtani S J (2008). *Atlas of tooth development and eruption*. Barts and the London School of Medicine and Dentistry. London, Queen Mary University of London. MclinDent.
- Ambers, J, Bowman, S, Gibson, A and Kinnes, I. 1992. Radiocarbon results for the British beakers. *Radiocarbon* 34 (3) 916-927.
- Anderson, T. 2002. Healed trauma in an early Bronze Age skeleton from Buckinghamshire, England. *International Journal of Osteoarchaeology* 12: 220-225.
- Andrews, P. 1995. Experiments in taphonomy. *Journal of Archaeological Science* 22 (2) 147-153.
- Annable, R. 1987. *The later prehistory of northern England: Cumbria, Northumberland and Durham from the Neolithic to the late Bronze Age*. BAR British Series 160.
- Appleby, J. 2010. Why we need an archaeology of old age, and a suggested approach. *Norwegian Archaeological Review* 43 (2) 145-168.

Appleby, J. 2011. Bodies, burials and ageing: accessing the temporality of old age in prehistoric societies. *Oxford Journal of Archaeology* 30 (3) 231-246.

Ashbee, P. 1960. *The Bronze Age round barrow in Britain*. London: Phoenix.

Ashbee, P. 1978. Amesbury barrow 51: excavations 1960. *Wiltshire Archaeological Magazine* 70/71 3-34.

Ashbee, P and Ashbee, R. 1981. A cairn on Hindlow, Derbyshire: excavations 1953. *Derbyshire Archaeological Journal* 101, 9-41.

Ashbee, P. 1985. The excavation of Amesbury barrows 58, 61a, 61, 72. *Wiltshire Archaeological and Natural History Magazine* 79, 39-91.

Aspöck, E. 2008. What actually is a 'deviant burial'? Comparing German-language and Anglophone research on 'deviant burials', in E.Murphy (ed) *Deviant burial in the archaeological record*. Oxford: Oxbow Books, 17-34.

Aufderheide, A.C. and Rodríguez-Martin, C. 1998. *The Cambridge encyclopaedia of human Palaeopathology*. Cambridge: Cambridge University Press.

Babić, S. 2005. Status, identity and archaeology, in M.Diaz-Andreu, S.Lucy, S.Babic and D.Edwards (eds) *The archaeology of identity: approaches to gender, age, status, ethnicity and religion*. Oxon: Routledge, 67-85.

Baby, R. 1954. Hopewell cremation practices. *The Ohio Historical Society Papers in Archaeology* 1.

Barber, M. 2003. *Bronze and the Bronze Age: metalwork and society in Britain c.2500-800 BC*. Gloucestershire: Tempus Publishing Ltd.

Barclay, A. and Halpin, C. 1999. *Excavations at Barrow hills, Radley, Oxfordshire*. Oxford: Thames valley landscapes monograph.

Barker, M. Tumuli near Carrock Fell. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 34 107-112.

Barnatt, J. 1989. Peak District barrow survey. Unpublished report for the Derbyshire Archaeological Advisory Committee. Derbyshire: Peak Park Joint Planning Board Archaeological Archive.



Barnatt, J. and Collis, J. 1996. *Barrows in the Peak District*. Sheffield: University of Sheffield.

Barnatt, J. and Edmonds, M. 2002. Places apart? Caves and monuments in Neolithic and Earlier Bronze Age Britain. *Cambridge Archaeological Journal* 12 (1) 113-129.

Barrett, J. 1988. The living, the dead and the ancestors: Neolithic and Early Bronze Age mortuary practices. *The archaeology of context in the Neolithic and Bronze Age: recent trends*. Sheffield: University of Sheffield, 30-41.

Barrett, J. 1990. The monumentality of death: the character of Early Bronze Age mortuary mounds in southern Britain. *World Archaeology* 22 (2) 179-189.

Barrett, J. 1994. *Fragments from Antiquity: an archaeology of social life in Britain, 2900-1200 BC*. Oxford: Blackwell.

Barrowclough, D. 2008. *Prehistoric Lancashire*. Stroud: The History Press.

Bass, W. 2005. *Human osteology: a laboratory and field manual of the human skeleton*. Columbia: Missouri Archaeological Society.

Bateman, T. 1848. *Vestiges of the antiquities of Derbyshire*. Derbyshire: Scarthin Books.

Bateman, T. 1861. *Ten years diggings in celtic and saxon grave hills in the counties of Derby, Stafford and York*. London: Moorland Publishing.

Bayliss, A. and Whittle, A. 2007. Histories of the dead: building chronologies for five southern British long barrows. *Cambridge Archaeological Journal* 17 (S1).

Bayliss, A, Whittle, A and Wysocki, M. 2007. Talking about my generation: the date of the West Kennet long barrow. *Cambridge Archaeological Journal* 17 85-101.

Baxter, J. 2005. *The archaeology of childhood: children, gender and material culture*. Oxford: AltaMira Press.

Beausang, E. 2000. Childbirth in prehistory: an introduction. *European Journal of Archaeology* 3 (1) 69-87.

Beckett, J. and Robb, J. 2006. Neolithic burial taphonomy, ritual, and interpretation in Britain and Ireland: a review, in R. Gowland and C. Knüsel (eds) *Social archaeology of funerary remains*. Oxford: Oxbow Books; 57-80.

Behrensmeyer, A.K. 1978. Taphonomic and ecologic information from bone weathering. *Paleobiology* 4 150-62.

Beisel, W.R. 1996. Nutrition and immune function: overview. *The Journal of Nutrition* 126 (10) 2611s-2615s.

Bennett, W. 1951. Report on excavations near Burnley. *Transactions of the Lancashire and Cheshire Antiquarian Society* 62 204-207.

Berry, A. & Berry, R., 1972. Origins and relationships of the ancient Egyptians. Based on a study of non-metrical variations in the skull. *Journal of Human Evolution* 1(2) 199-208.

Bewley, R.H., Longworth, I.H., Browne, S., Huntley, J.P. and Varndell, G. 1992. Excavation of a Bronze Age cemetery at Ewanrigg, Maryport, Cumbria. *Proceedings of the Prehistoric Society* 58, 325-354.

Bezner Kerr, R, Dakishoni, L, Shumba, L, Msachi, R and Chirwa, M. 2008. 'We grandmothers know plenty': Breastfeeding, complementary feeding and the multifaceted roles of grandmothers in Malawi. *Social Science and Medicine* 66 1095-1105.

Binford, L. 1963. An analysis of cremations from three Michigan sites. *Wisconsin Archaeology* 44 98-110.

Binford, L. 1971. Mortuary Practices: Their study and potential. *Memoirs for the Society for American Archaeology* 25 6-29.

Binford, L.R. 1981. *Bones: ancient men and modern myths*. London: Academic Press.

Bolen, K.M. 1992. Prehistoric construction of mothering in, C. Claassen (ed) *Exploring gender through archaeology*. Monographs in World Archaeology 11. Madison: Prehistory Press, 49-62.

Boldsen, J.L. 2007. Early childhood stress and adult age mortality – A study of Dental Enamel Hypoplasia in the Medieval Danish village of Tirup. *American Journal of Physical Anthropology* 132 59-66.

Boston, C, Bowater, C, Boyle, A and Holmes, A. 2003. Excavation of a Bronze Age barrow at the proposed centre for gene function, South Parks Road, Oxford, 2002. *Oxoniensia* 70 179-200.

Boylston, A. 2000. Evidence for weapon-related trauma in British Archaeological samples, in M.Cox and S.Mays (eds) *Human osteology in archaeology and forensic sciences*. London: Greenwich Medical Media, 357-380.

Bourdieu, P. 1970. The Berber house or the world reversed. *Social Science Information* 9 (2) 151-170.

Bradley, R. 1991. The pattern of change in British Prehistory in, T.Earle (ed) *Chieftdoms: Power, economy and ideology*. Cambridge: Cambridge University Press, 44-70.

Bradley, R. 1998. *The passage of arms: an archaeological analysis of prehistoric hoards and votive deposits*. Oxford: Oxbow Books.

Bradley, R. and Edmonds, M. 2005. *Interpreting the axe trade: production and exchange in Neolithic Britain*. Cambridge: Cambridge University Press.

Brewster, T.C.M. and Finney, A.E. 1995. *The excavation of seven Bronze Age barrows on the moorlands of North-East Yorkshire*. Leeds: Yorkshire Archaeological Society.

Brickley, M. and McKinley, J. 2004. *Guidelines to the standards for recording human remains*. IFA Paper No. 7.

Bridgford, S. 1997. The first weapons devised only for war. *British Archaeology* 22, 7-8.

Brittain, M. 2007. Do barrows matter? Politics, production and practice of the Welsh Bronze Age in, J. Last (ed) *Beyond the grave: new perspectives on barrows*. Oxford: Oxbow Books, 140-155.

Brodie, N. 1994. *The Neolithic – Bronze Age transition in Britain: a critical review of archaeological and craniological concepts*. BAR 238.

Brodie, N. 1997. New perspectives on the bell-beaker culture. *Oxford Journal of Archaeology* 16(3).

Brooks, S. and Suchey, J.M. 1990. Skeletal age determination based on the os pubis: a comparison of the Acsádi-Nemeskéri and Suchey-Brooks methods. *Human Evolution* 5: 227-238.

Brookshaw, S., 2009. The Material Culture of Children and Childhood. *Journal of Material Culture*, 14(3), 365-383.

- Brothwell, D. 1961. The Bronze Age people of Yorkshire; a general survey. *Advancement of Science* 16 311-322.
- Brothwell, D. 1972. Palaeodemography and earlier British populations. *World Archaeology* 4 (1) 75-87.
- Brothwell, D. 1981. *Digging up bones*. Cornell: Cornell University Press.
- Brothwell, D. 1989. The relationship of tooth wear to aging. In M.Y. İşcan (ed) *Age markers in the human skeleton*. Illinois: Charles C Thomas; 303-317.
- Brown, J. 1970. A note on the division of labour by sex. *American Anthropologist* 72 1073-1078.
- Brown, J.A. 1981. The search for rank in prehistoric burials in, R.Chapman, I. Kinnes and K.Randsborg (eds) *The Archaeology of death*. Cambridge: Cambridge University Press, 25-37.
- Brown, P. 1990. Big Man, past and present: Model, person, hero, legend. *Ethnology* 29 (2) 97-115.
- Brown, K. 2012. 'Women on the move – the DNA evidence for female mobility and exogamy in prehistory'. Movement and mobility in the Neolithic: Neolithic Studies Group 2012 meeting. London: British Museum.
- Brück, J. 1999. Ritual and Rationality: some problems of interpretation in European Archaeology. *European Journal of Archaeology* 2 (3) 313-344.
- Brück, J. 2001. Monuments, power and personhood in the British Neolithic. *Journal of the Royal Anthropological Society* 7 (4) 649-667.
- Brück, J. 2006. Death, exchange and reproduction in the British Bronze Age. *European Journal of Archaeology* Vol. 9(1): 73–101.
- Brück, J. 2004. Material metaphors: The relational construction of identity in Early Bronze Age burials in Ireland and Britain. *Journal of Social Archaeology* 4 (3) 307-333.
- Brück, J., 2009. Women, death and social change in the British Bronze Age. *Norwegian Archaeological Review*, 42(1), 1-23.

- Budden, S. and Sofaer, J. 2009. Non-discursive knowledge and the construction of identity. *Cambridge Archaeological Journal* 19 (2) 203-20.
- Buckberry, J.L. and Chamberlain A.T. 2002. Age estimation from the auricular surface of the ilium: a revised method. *American Journal of Physical Anthropology* 119 231-239.
- Buck, C.E, Litton, C.D., Kenworthy, J.B. and Smith, A. 1991. Combining archaeological and radiocarbon information: a Bayesian approach to calibration. *Antiquity* 65 808-821.
- Buikstra, J.E. and Ubelaker, D.H. 1994. *Standards for data collection from human skeletal remains*. Arkansas: Arkansas Archaeological Society.
- Bu'Lock, J.D. 1961. The Bronze Age in the north-west. *Transactions of the Lancashire and Cheshire Antiquarian Society* 71, 1-42.
- Burgess, C. 1980. *The age of Stonehenge*. London: JM Dent.
- Burrow, S. 2006. The tomb builders in Wales 4000-3000 BC. Cardiff: National Museum of Wales Books.
- Butler, C. 2005. *Prehistoric flintwork*. Gloucestershire: The History Press.
- Byers, S.N. 2005. *Introduction to Forensic Anthropology*. Boston: Pearson.
- Callander, G. Notice of a jet necklace found in a cist in a Bronze Age cemetery, discovered on Burgie Lodge Farm, Morayshire, with notes on Scottish prehistoric jet ornaments. *Proceedings of the Prehistoric Society* 50, 201-240.
- Capasso, L, Kennedy, K, and Wilczak, C. 1999. *Atlas of occupational markers on human remains*. Teramo: Edigrafial.
- Case, H. 2003. Beaker presence at Wilsford 7. *Wiltshire Archaeological and Natural History Magazine* 96 161-194.
- Case, H. 2004. Bell beaker and corded ware culture burial associations: a bottom-up rather than top-down approach, in A.Gibson and A.Sheridan (eds) *From sickles to circles*. Gloucestershire: Tempus, 201-314.
- Cave, A.J.E. 1961. Bronze age burial from Beech Hall, Macclesfield. *Journal of the Chester archaeological Society* 48, 43-5.

Chamberlain, A.T. 2000. Problems and prospects in palaeodemography, in S. Mays and M. Cox (eds) *Human osteology in archaeology and forensic medicine*. London: Greenwich Medical Media, 101-116.

Chamberlain, A. 2006. *Demography in archaeology*. Cambridge: Cambridge University Press.

Chenery, C.A. and Evans, J.A. 2011. A summary of the strontium and oxygen isotope evidence for the origins of bell beaker individuals found near Stonehenge, In A.Fitzpatrick (ed) *The Amesbury archer and the Boscombe bowmen*. Salisbury: Wessex Archaeology Ltd, 185-186.

Childe, V.G. 1933. Races, peoples and cultures in prehistoric Europe. *History*, 18:71 193-203.

Childe, V.G. 1939. *The dawn of European civilization*. London: Kegan Paul.

Childe, V.G. Johnston, G.S. and Warwick, G.T. 1948. Cinerary urns from Kirk Ireton. *Derbyshire Archaeological Journal* 68 31-36.

Collis, J. 1983. *Wigber Low*. Sheffield: Sheffield University Press.

Clark, G. 1966. The invasion hypothesis in British archaeology. *Antiquity* 40 172-189.

Clarke, J.D.G. 1972. *Star Carr: a case study in bioarchaeology*. New York: Addison-Wesley.

Clarke, D.V, Cowie, T.G and Foxon, A. 1985. *Symbols of power: at the time of Stonehenge*. Edinburgh: National Museum of Antiquities of Scotland.

Cohen, M. 1989. Introduction, in M.Cohen, G. Crane-Kramer (eds) *Ancient health: Skeletal indicators of agricultural and economic intensification*. Gainesville, FL, USA: University Press of Florida, 1-9.

Cohen, H, Sarie, I, Medlej, B, Bocquentin, F, Tolendano, T, Hershkovitz, I and Slon, V. 2012. Trauma to the skull: a historical perspective from the Southern Levant (4300BCE-1917CE). *International Journal of Osteoarchaeology* DOI: 10.1002/oa.2258

Coppa, A, Cucina, A, Mancinelli, D, Vargiu, R and Calcagno, J. 1998. Dental anthropology of Central-Southern, Iron Age Italy: The evidence of metric versus non-metric traits. *American Journal of Physical Anthropology*, 107(4), 371-386.

- Connell, R. 2005. *Masculinities*. Cambridge: Polity.
- Conkey, M and Spector, J. 1984. Archaeology and the study of gender, in M.Schiffer (ed) *Advances in archaeological method and theory*. New York: Academic Press, 1-38.
- Corbett, M and Moore, W. 1976. Distribution of dental caries in ancient British populations. *Caries Research* 10 (6) 401-414.
- Cox, M. 2000. Ageing adults from the skeleton, In M.Cox and S.Mays (eds) *Human osteology in archaeology and forensic science*. London: Greenwich Medical Media, 61-82.
- Crawford, S. 1991. When do Anglo-Saxon children count? *Journal of Theoretical Archaeology* 2 17-24.
- Crawford, S. 2000. Children, grave goods and social status in Early Anglo-Saxon England, in J.Sofaer (ed) *Children and material culture*. London: Routledge, 169-179.
- Cressey, M. and Sheridan, A. 2003. The excavation of a Bronze Age cemetery at Seafeld West, near Inverness, Highland. *Proceedings of the Society of Antiquaries of Scotland*, 133, 47-84.
- Crown, P.L. 2007. Life histories of pots and potters: situating the individual in archaeology. *American Antiquity* 72 (4) 677-690.
- Cunnington, M.E. 1908. Notes on the opening of a Bronze Age barrow at Manton, near Marlborough. *The Wiltshire Archaeological and Natural History Magazine* 35, 1-20.
- Curtis, N. and Wilkin, N. 2012. The regionality of beakers and bodies in the Chalcolithic of North-East Scotland, In J.Gardiner, M.J.Allen and A.Sheridan (eds) *Is there a British Chalcolithic?: People, place and polity in the later third millennium*. Oxford: Oxbow Books,
- Dahlberg, F. 1981. Introduction in F.Dahlberg (ed) *Woman the gatherer*. London: Yale University Press, 1-34.
- Danner, E. 2008. *Cremated tooth morphology: construction of a user's guide*. Unpublished UCLan MSc dissertation, department of forensic and investigative sciences. University of central Lancashire: Preston.

DeKosy, S.T. and Ikonomic, M.D, and Gandy, S. 2010. Traumatic brain injury – football, warfare and long-term effects. *New England Journal of Medicine* 363 (14) 1293-1296.

Delgado-Darias, T, Velasco-Vázquez, J, Arnan-de-la-Rosa, M, Martín-Rodríguez E, Gonzalez-Reimers, E. 2006. Calculus, periodontal disease and tooth decay among the prehispanic population from Gran Canaria. *Journal of Archaeological Science* 33 663-670.

Dent, J. 1979. Bronze Age burials from Wetwang Slack. *Yorkshire Archaeological Journal*, 51, 23–39.

Devaney, R. 2005. Ceremonial and domestic flint arrowheads. *Lithics: The Journal of the Lithic Studies Society* 26: 9–22.

Diaz-Andreu, M, Lucy, S, Babic, S and Edwards, D. 2005. *The archaeology of identity: approaches to gender, age, status, ethnicity and religion*. Oxon: Routledge.

Donahue, R. Scientific analysis of the artefacts, in A. Gibson (ed) *The Walton Basin project: excavation and survey in a prehistoric landscape 1993-7*. York: Council for British Archaeology.

Downes, J. 1999. Cremation: a spectacle and a journey, In J.Downes and T.Pollard (eds) *The loved body's corruption: Archaeological contributions to the study of human mortality*. Glasgow: Cruithne Press, 19-29.

Dronfield, J. 1995. Migraine, light and hallucinogens: the neurocognitive basis of Irish megalithic art. *Oxford Journal of Archaeology* 14 (3) 261-275.

Duffy, P.R.J. and MacGregor, G. 2008. Cremations, Conjecture and Contextual Taphonomies: Material Strategies during the 4th to 2nd Millennium BC in Scotland, in T. Oestigaard, and F. Fahlander, *The materiality of death: Bodies, burials, beliefs*. BAR International Series 1768.

Dunwell, A, Neighbour, T, and Cowie, T. 1995. A cist burial adjacent to the Bronze Age cairn at Cnip, Uig, Isle of Lewis. *Proceedings of the Society of Antiquarians of Scotland* 125 279-288.

Earle, T. 1987. Chieftdoms in archaeological and ethnohistorical perspective. *Annual Review of Anthropology* 16 279-308.



- Earle, T. 1991. The evolution of chiefdoms in, T.Earle (ed) *Chiefdoms: power, economy and ideology*. Cambridge: Cambridge University Press, 1-15.
- Earle, T. 2000. Archaeology, property, prehistory. *Annual Review of Anthropology*. 29 39-60.
- Earle, T. and Kristiansen, K. 2010. *Organising Bronze Age societies*. Cambridge: Cambridge University Press.
- Eicher, J.B. 1998. Beaded and bedecked Kalabari of Nigeria, in L.D.Sciama and J.B.Eicher (eds) *Beads and beadmakers: gender, material culture and meaning*. Oxford: Berg, 95-116.
- Elgee, H.W. and, Elgee, F. 1949. An Early Bronze Age boat burial in a boat-shaped wooden coffin from north east Yorkshire. *Proceedings of the Prehistoric Society* 15 87-106.
- Endicott, K. 1999. Batek in, R.B.Lee and R.Daly (eds) *The Cambridge encyclopedia of hunters and gatherers*. Cambridge: Cambridge University Press, 298-302.
- Eshed, V, Latimer, B, Greenwald, C.M, Jellema, L.M., Rothschild, B.M, Wish-Baratz, S and Herskovitz, I. 2002. Button osteoma: Its etiology and pathophysiology. *American Journal of Physical Anthropology* 118 217-230.
- Espinosa, J and Evans, W.N. 2012. Maternal bereavement: the heightened mortality of mothers after the death of a child. *Economics and Human biology* (2010), doi:10.1016/j.ehb.2012.06.002
- Estioko-Griffin, A and Griffin, P.B. 1981. Woman the hunter: the Agta in, F.Dahlberg (ed) *Woman the gatherer*. London: Yale University Press, 121-152.
- Evans, J.G. 1984. Stonehenge – The environment in the Late Neolithic and Early Bronze Age and a beaker age burial. *The Wiltshire Archaeological and Natural History Magazine* 78 7-30.
- Evans, J., Chenery, C.A. and Fitzpatrick, A.P. 2006. Bronze age childhood migration of individuals near Stonehenge. *Archaeometry* 48: 309-21.
- Evans, H. 2008. *Neolithic and Bronze Age landscapes of Cumbria*. BAR British Series 463.

- Faccia, K.J. and Williams, R.C. 2008. Schmorl's nodes: clinical significance and implications for the bioarchaeological record. *International Journal of Osteoarchaeology* 18 28-44.
- Fell, C. Two enlarged food vessels from How Hill Thursby and notes on the distribution of food vessels in Cumberland, Westmorland and Lancashire-N-of-Sands. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 67 17-25.
- Fitzpatrick, A. 1997. Everyday life in Iron Age Wessex. In Gwilt, A. & Haselgrove, C. (eds) *Reconstructing Iron Age Societies: new approaches to the British Iron Age*. Oxbow Monograph 71. Oxford: Oxbow: 73-86.
- Fitzpatrick, A. P. 2011. *The Amesbury archer and the Boscombe bowmen*. Salisbury: Wessex Archaeology Report 27.
- Fleming, A. 1971. Territorial patterns in Bronze Age Wessex. *Proceedings of the Prehistoric Society* 37 138-166.
- Fletcher, M. 1985. The Bronze Age complex on Cheetham Close, Turton: a new survey. *The Greater Manchester Archaeological Journal*, 1 1-12.
- Finlay, N. 2000. Outside of life: traditions of infant burial in Ireland from cillin to cist. *World Archaeology* 31 (3) 407-422.
- Forde-Johnston, J. 1960. The excavation of a round barrow at Gallowsclough Hill, Delamere forest, Cheshire. *Transactions of the Lancashire and Cheshire Antiquarian Society* 70, 74-83.
- Fowler, C. 2001. Personhood and social relations in the British Neolithic with a study from the Isle of Man. *Journal of Material Culture* 6 (2) 137-163.
- Fowler, C. 2003. Rates of exchange, in H.Williams (ed) *Archaeologies of remembrance: death and memory in past societies*. New York: Kluwer Academic, 45-54.
- Fowler, C. 2004. *The archaeology of personhood: An anthropological approach*. London: Routledge.
- Fowler, C. 2010. Relational personhood as a subject of anthropology and archaeology: comparative and complementary analyses in, D.Garrow and T.Yarrow (eds) *Archaeology and anthropology: understanding similarities, exploring differences*. Oxford: Oxbow Books, 137-159.

- Fox, C. 1959. *Life and death in the Bronze Age*. London: Routledge and Kegan Paul.
- Frieman, C. 2012. Going to pieces at the funeral: completeness and complexity in Early Bronze Age jet 'necklace' assemblages. *Journal of Social Archaeology* 12 334-355.
- French, C. 1994. *Excavation of the Deeping St Nicholas barrow complex, South Lincolnshire*. Lincolnshire: Heritage Trust of Lincolnshire.
- Garwood, P. 1991. Ritual tradition and the reconstruction of society, in P.Garwood, D.Jennings, R.Skeates and R.Toms (eds) *Sacred and profane*. Oxford: Oxford University Committee for Archaeology, 10-32.
- Garwood, P. 2007a. Before the hills in order stood: chronology, time and history in the interpretation of Early Bronze Age round barrows in, J. Last (ed) *Beyond the grave: new perspectives on barrows*. Oxford: Oxbow Books, 30-52.
- Garwood, P. 2007b. Vital resources, ideal images and virtual lives: children in the Early Bronze Age, in S.Crawford and G.Shepherd (eds) *Children, Childhood and Society*. BAR International Series 1696. Oxford: Archaeopress, 63-82.
- Gardiner, J.K. 1981. On female identity and writing by women. *Critical Inquiry* 347-361.
- Gatens, M. 2000. Power, bodies and difference, in J.Thomas (ed) *Interpretive archaeology: a reader*. London: Leicester University Press, 290-303.
- Gero, J.M. and Conkey, M.W. 1991. Tensions, pluralities, and engendering archaeology: an introduction to women in prehistory, in J.M.Gero and M.W.Conkey (eds) *Engendering archaeology: women and prehistory*. Oxford: Blackwell, 3-30.
- Gero, J.M. 1991. Genderlithics: Women's roles in stone tool production in, J.M.Gero and M.W.Conkey (eds) *Engendering archaeology: women and prehistory*. Oxford: Blackwell, 163-193.
- Gejvall, N.G. 1963. Cremations. In, *Science in archaeology*. D. Brothwell and H. Higgs (eds). London: Thames and Hudson.
- Geller, P.L., 2005. Skeletal analysis and theoretical complications. *World archaeology*, 37(4), 597-609.
- Gibson, A. 1994. The excavations at the Sarn-y-bryn-caled cursus complex, Welshpool,

Powys, and the timber circles of Great Britain and Ireland. *Proceedings of the Prehistoric Society* 60 143- 223.

Gibson, A. 2004. Small but perfectly formed: Some observations on the Bronze Age cups of Scotland, A.Gibson and A.Sheridan (eds) *From sickles to circles*. Gloucestershire: Tempus, 270-288.

Gibson, A. 2005. *Stonehenge and timber circles*. Stroud: Tempus.

Gibson, A. 2007. A beaker veneer? Some evidence from the burial record in, M. Larsson and M. Parker Pearson (eds). *From Stonehenge to the Baltic: living with cultural diversity in the third millennium BC*. BAR International Series 1692.

Giddens, A. 1991. *Modernity and self-identity: self and society in the late modern age*. Cambridge: Polity Press.

Gilchrist, R. 1999. *Gender and archaeology: contesting the past*. London: Routledge.

Gilchrist, R., 2000. Archaeological biographies: realizing human lifecycles, -courses and -histories. *World archaeology*, 31(3), 325-328.

Gill, G.W. 1998. Craniofacial criteria in the skeletal attribution of race, in K.Reichs (ed) *Forensic osteology : Advances in the identification of human remains*. Springfield, IL, USA: Charles C Thomas, 293-317.

Gilman, A. 1981. The development of social stratification in Bronze Age Europe. *Current Anthropology* 22 (1) 1-23.

Ginn, J and Arber, S. 1995. 'Only connect': gender relations and ageing in, S.Arber and J.Ginn (eds) *Connecting gender and ageing: a sociological approach*. Buckingham: Open University Press, 1-14.

Glencross, B. & Stuart-Macadam, P., 2000. Childhood trauma in the archaeological record. *International Journal of Osteoarchaeology*, 10(3), 198-209.

Glencross, B. & Stuart-Macadam, P., 2001. Radiographic clues to fractures of distal humerus in archaeological remains. *International Journal of Osteoarchaeology*, 11(4), 298-310.

Godelier, M and Strathern, M. 1991. *Big men and great men: personifications of power in Melanesia*. Cambridge: Cambridge University Press.

- Goldstein, L. 2006. Mortuary analysis and bioarchaeology, in J.E. Buikstra and L.A. Beck (eds) *Bioarchaeology: the contextual analysis of human remains*. Academic Press: London, 375-388.
- Gosden, C. and Marshall, Y. 1999. The cultural biography of objects. *World Archaeology* 31 (2) 169-178.
- Gowland, R. 2006. Age as an aspect of social identity: the archaeological funerary evidence. In, R. Gowland and C. Knusel, *Social Archaeology of Funerary Remains*. Oxford: Oxbow, 143-154.
- Gowland, R. 2007. Beyond ethnicity: symbols of identity in fourth to sixth century AD England. *Anglo-Saxon Studies in Archaeology and History* 14: 56-65.
- Green, C, Lynch, F and White, H. 1982. The excavation of two round barrows on Launceston Down, Dorset (Long Crichel 5 and 7). *Proceedings of the Dorset Natural History and Archaeological Society* 104 39-50.
- Green, H.S. 1989. The Stone Age cave archaeology of South Wales, in T.Ford (ed) *Limestones and caves of Wales*. Cambridge: Cambridge University Press, 70-78.
- Greenwell, W and Rolleston, R. 1877. *British barrows: a record of the examination of sepulchral mounds in various parts of England*. Clarendon Press.
- Greenfield, E. 1960. The excavation of barrow 4 at Swarkeston, Derbyshire. *Journal of the Derbyshire Archaeological and Natural History Society* 80, 1-48.
- Greenfield, H.J. 1999. The origins of metallurgy: distinguishing stone from metal cut-marks on bones from archaeological sites. *Journal of Archaeological Science* 26 (7) 797-808.
- Grinsell, L.V. 1940. Sussex barrows: a supplementary paper. *Sussex Archaeological Collections* 81, 210-214.
- Grinsell, L.V. 1953. *The ancient burial-mounds of England*. Methuen.
- Grinsell, L.V. 1971. Somerset barrows, Part II: North and East. *Proceedings of the Somerset Archaeological and Natural History Society* 115 44-137.
- Guenther, M. 1999. From totemism to shamanism: hunter-gatherer contributions to world mythology and spirituality, in R.B.Lee and R.Daly (eds) *The Cambridge*

*encyclopedia of hunters and gatherers*. Cambridge: Cambridge University Press, 426-433.

Haglund, W.D. 1997. Dogs and coyotes: post-mortem involvement with human remains, in Haglund, W and Sorg, M. *Forensic Taphonomy: the post-mortem fate of human remains*. Florida: CRC press.

Halcrow, S.E. and Tayles, N. 2008. The bioarchaeological investigation of childhood and social age: problems and prospects. *Journal of Archaeological Method and Theory* 15 190-215.

Harding, A. 2006. What does the context of deposition and frequency of Bronze Age weaponry tell us about the function of weapons? In, T. Otto, H. Thrane and H. Vandkilde (eds) *Warfare and society: archaeological and social anthropological perspectives*. Denmark: Aarhus University Press, 505-514.

Harding, A. and Palmer, C. 2007. Velim: violence and death in Bronze Age Bohemia. *Archaeologický ústav AV ČR*.

Härke, H. 1990. "Warrior Graves"? The Background of the Anglo-Saxon Weapon Burial Rite. *Past and Present* 126, 22-43.

Härke, H. 1992. Changing symbols in a changing society: the Anglo-Saxon weapon burial rite in the seventh century, in M. Carver (ed) *The age of Sutton Hoo*. Rochester: USA: Boydell Press, 149-166.

Harper, M. 1987. Possible toxic metal exposure of prehistoric bronze workers. *British Journal of Industrial Medicine* 44 652-656.

Hawkey, D.E. and Merbs, C.F. 1995. Activity-induced Musculoskeletal Stress Markers (MSM) and subsistence strategy changes among ancient Hudson Bay Eskimos. *International Journal of Osteoarchaeology* 5 324-338.

Hays-Gilpin, K and Whitley, D. 1998. *Reader in gender archaeology*. London: Routledge.

Healy, F. And Harding, J. 2004. Reading a burial: the legacy of Overton Hill, in A. Gibson and A. Sheridan (eds), *From Sickles to Circles*. Gloucestershire: Tempus, 176-193.

Healy, F and Harding, J. 2007. A thousand and one things to do with a round barrow in, J. Last (ed) *Beyond the grave: new perspectives on barrows*. Oxford: Oxbow Books, 53-71.

Healy, F. 2012. Chronology, corpses, ceramics, copper and lithics, in M.Allen, J.Gardiner and A.Sheridan (eds) *Is there a British Chalcolithic? People, place and polity in the late 3<sup>rd</sup> millennium*. Oxford: Oxbow Books, 144-163.

Heathcote, J.P. 1936. Further excavations on Stanton Moor. *Journal of the Derbyshire Archaeological and Natural History Society* 57-58 21-42.

Hedges, R.E.M., Pettitt, P.B. ramsey, C.B. and Klinken, G.J. 1996. Radiocarbon dates from the Oxford AMS system: Archaeometry datelist 22. *Archaeometry* 38: 391-419.

Hedges, R.E.M. 2001. Dating in archaeology; past, present and future, in D.R. Brothwell & A.M. Pollard (eds) *Handbook of Archaeological Sciences*. Oxford: Wiley-Blackwell, 3-8.

Helms, M.W. 1979. *Ancient Panama: chiefs in search of power*. Austin: University of Texas Press.

Henderson, J., Janaway, R.C. and Richards, J.R. 1987a. Cremation slag: a substance found in funerary urns, in A. Boddington, A.N. Garland and R.C. Janaway (eds) *Death, decay and reconstruction: approaches to archaeology and forensic science*. Manchester University Press: Manchester.

Henderson, J., Janaway, R. and Richards, J. 1987b. A curious clinker. *Journal of Archaeological Science* 14, 343 – 365.

Herskovitz, I, Latimer, B, Dutour, O, Jellema, L.M, Wish-Baratz, S, Rothschild, C and Rothschild, B.M. 1997. Why do we fail in aging the skull from the sagittal suture? *American Journal of Physical Anthropology* 103 (3) 393-399.

Hewitt, I. and Beckensall, S. 1996. The excavations of cairns at Blawearie, Old Bewick, Northumberland. *Proceedings of the Prehistoric Society* 62 255-274.

Hewitt, B.R. 2003. Mortality in traditional hunter-gatherer, pastoralist and agriculturalist communities: the validity of longevity studies based on mobility and subsistence strategies. *NEXUS* 16 (1) 27-49.

Hewlett, B.S. 2003. Fathers in forager, farmer and pastoral cultures. *The role of the father in child development*, 182-195.

Hillson, S. 1996. *Dental Anthropology*. Cambridge: Cambridge University Press.

Hillson, S. 2005. *Teeth*. Cambridge: Cambridge University Press.

- Hird, M.J. 2007. The corporeal generosity of maternity. *Body and Society* 13 (1) 1-20.
- Hockey, J. and James, A. 2003. *Social identities across the life course*. Basingstoke: Palgrave Macmillan.
- Hodder, I. 1982. Theoretical archaeology: a reactionary view, in I.Hodder (ed) *Symbolic and structural archaeology*. Cambridge: Cambridge University Press, 1-16.
- Hodges, R, Thomas, J, and Wildgoose, M. 1989. *The barrow cemetery at Roystone Grange*. *Derbyshire Archaeology Journal* 109, 7-16.
- Hodgson, K.S. 1940. Some excavations in the Bewcastle district. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 40 154-162.
- Hodgson, K.S. 1952. Further excavations at Broomrigg, near Ainstable. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 52 1-8.
- Hodgson, K.S. 1956. Three unpublished collections of Bronze Age pottery: Netherall, Garlands and Aglionby. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*. 56 1-17.
- Hodgson, D.L. 1999. 'Once Intrepid Warriors': Modernity and the production of Maasai masculinities. *Ethnology* 38 (2), 121-150.
- Hodgson, D.L. 2004. *Once intrepid warriors: gender, ethnicity, and the cultural politics of Maasai development*. Bloomington, Indiana: Indiana University Press.
- Hunter, F. 2000. Excavation of an Early Bronze Age cemetery and other sites at West Water Reservoir, West Linton, Scottish Borders. *Proceedings of the Society of Antiquaries of Scotland* 130 115-182.
- Howard-Davis, C and Williams, J. 2005. Excavations on a Bronze Age cairn at Hardendale Nab, Shap, Cumbria. *Archaeological Journal* 161 11-53.
- Insoll, T. 2007. Configuring identities in archaeology, In T. Insoll (ed) *The archaeology of identities: a reader*. Routledge: London.
- Inoue, K, Takigawa, W, Sato, M, Kumagai, M, Dodo, Y, and Katayama, K. 2005. A possible case of spondyloarthropathy in a prehistoric Japanese skeleton. *International Journal of Osteoarchaeology* 15 186-195.



- Kamp, K.A. 2001a. Where have all the children gone?: the archaeology of childhood. *Journal of Archaeological Method and Theory* 8 (1) 1-34.
- Kamp, K.A. 2001b. Prehistoric children working and playing: a southwestern case study in learning ceramics. *Journal of Anthropological Research* 57 427-450.
- King, J.M. 2004. Grave-goods as gifts in Early Saxon burials (ca. AD 450-600). *Journal of Social Archaeology* 4 (2) 214-238.
- King, T, Humphrey, L.T. and Hillson, S. 2005. Linear enamel hypoplasias as indicators of physiological stress: Evidence from two known age at death and sex populations from post-medieval London. *American Journal of Physical Anthropology* 128 (3) 547-559.
- Kinnes, I. and Longworth, I.H. 1985. *Catalogue of the excavated prehistoric and romano-british material in the Greenwell collection*. London: British Museum Publications.
- Kitzinger, S. 1978. *Women as mothers*. London: Fontana.
- Knudson, K.J. and Stojanowski, C.M. 2008. New directions in bioarchaeology: recent contributions to the study of human social identities. *Journal of Archaeological Research*, 16 (4) 397-432.
- Knüsel, C. 2002. More Circe than Cassandra: the Princess of Vix in ritualised social context. *European Journal of Archaeology* 5(3), 275-308.
- Knüsel, C. 2005. The physical evidence of warfare – subtle stigmata? In M.Parker Pearson and I.Thorpe (eds) *Warfare, violence and slavery in prehistory*. BAR International Series 1374, 49-66.
- Knüsel, C. 2010. Bioarchaeology: a synthetic approach/Bioarchéologie : une approche synthétique. *Bulletins et Mémoires de la Société d'Anthropologie de Paris*. 22, 1-2, 62-73.
- Kopytoff, I. 1986. The cultural biography of things: commoditization as process, in A.Appadurai (ed) *The social life of things*. Cambridge: Cambridge University Press, 64-91.
- Kraus, J.F. and McArthur, D.L. 2006. Epidemiology of brain injury, in R.Evans (ed) *Neurology and trauma*. Oxford: Oxford University Press, 3-18.

Kristiansen, K. 1991. Chiefdoms, states and systems of social evolution, in T.Earle (ed) *Chiefdoms, power, economy and ideology*. Cambridge: Cambridge University Press, 16-43.

Kristiansen, K. 1999. *Europe before prehistory*. Cambridge: Cambridge University Press.

Kristiansen, K. 2002. The tale of the sword – swords and swordfighters in Bronze Age Europe. *Oxford Journal of Archaeology* 21 (4) 319-332.

Kyere, K.A. Than, K.D, Wang, A.C, Rahman, S.U, Valdivia, J.M, La Marca, F and Park, P. 2012. Schmorl's nodes. *European Spine Journal* 1-7.

Janowski, M. 1998. Beads, prestige and life among the Kelabit of Sarawak, East Malaysia, in L.D.Sciama and J.B.Eicher (eds) *Beads and beadmakers: gender, material culture and meaning*. Oxford: Berg, 213-246.

Jantzen, D, Brinker, U, Orschiedt, J, Heinemeier, J, Piek, J, Hauenstein, K, Krüger, J, Lidke, G, Lübke, H, Lampe, R, Lorenz, S, Schult, M and Terberger, T. 2011. A Bronze Age battlefield? Weapons and trauma in the Tollense Valley, north-eastern Germany. *Antiquity* 85 417-433.

Jay, M. and Richards, M. 2007. The beaker people project: progress and prospects for the carbon, nitrogen and sulphur isotopic analysis of collagen, in M.Larsson and M.Parker Pearson (eds) *From Stonehenge to the Baltic: Living with cultural diversity in the third millennium BC*. BAR International Series 1692.

Jenkins, R. 1996. *Social identity*. London: Routledge.

Jones, S. 1997. *The archaeology of ethnicity: constructing identities in the past and present*. London: Routledge.

Jones, A. 2002. A biography of colour: Colour, material histories and personhood in the Early Bronze Age of Britain and Ireland, in A. Jones and G. MacGregor (eds) *Colouring the past*. Oxford: Berg.

Jones, A. 2008. How the dead live: mortuary practices, memory and the ancestors in Neolithic and Early Bronze Age Britain and Ireland, in J.Pollard (ed) *Prehistoric Britain*. Oxford: Blackwell, 177-201.

Joyce, R. 1999. Social dimensions of pre-classic burials, in D.C.Grove and R.Joyce (eds) *Social patterns in pre-classic Mesoamerica*. Washington DC: Dumbarton Oaks, 15-47.

Joyce, R. 2000. Girling the girl and boyng the boy: the production of adulthood in ancient Mesoamerica. *World Archaeology* 31 (3) 473-483.

Joyce, R. 2001. Burying the dead at Tlatilco: social memory and social identities, in M.Chesson (ed) *Social memory, identity and death: anthropological perspectives on mortuary rituals*. *Archaeological papers of the American Anthropological Association* 10, 12-26.

Jurmain, R. 1977. Stress and the etiology of osteoarthritis. *American Journal of Physical Anthropology* 46 353-366.

Jurmain, R. 1999. *Stories from the skeleton*. Amsterdam; Gordon and Breach.

Larson, C, and Walker, P. 2005. The ethics of bioarchaeology in, T.Turner (ed) *Biological anthropology and ethics: from repatriation to genetic identity*. New York: SUNY Press, 111-120.

Lanting, J.N, Aerts-Bijma, A.T. and Van der Plicht, J. 2001. Dating of cremated bones. *Radiocarbon* 43 249-254.

Last, J. 1998. Books of life: Biography and memory in a Bronze Age barrow. *Oxford journal of archaeology* 17(1).

Last, J. 2007a. Beyond the grave: new perspectives on barrows, in J. Last (ed) *Beyond the grave: new perspectives on barrows*. Oxford: Oxbow Books, 1-13.

Last, J. 2007b. Covering old ground: barrows as closures in J. Last (ed) *Beyond the grave: new perspectives on barrows*. Oxford: Oxbow Books, 156-175.

Leach, S. 2008. Odd one out? Earlier Neolithic deposition of human remains in caves and rock shelters, in E.Murphy (ed) *Deviant burial in the archaeological record*. Oxford; Oxbow Books, 35-56.

Leah, M., Wells, C., Appleby, C. and Huckerby, E. 1997. *The wetlands of Cheshire*. Lancaster Imprints 5.

Lai, P and Lovell, N. 1992. Skeletal markers of occupational stress in the fur trade: a case study from a Hudson's Bay company fur trade post. *International Journal of Osteoarchaeology* 2 221-234.

Leibowitz, L. 1986. In the beginning.....' the origins of the sexual division of labour and the development of the first human societies. In, S.Coontz and P.Henderson (eds) *Women's work, men's property: the origins of gender and class*. London: Verso, 43-75.

Lewis, J. 2007. The creation of round barrows on the Mendip Hills, Somerset in, J. Last (ed) *Beyond the grave: new perspectives on barrows*. Oxford: Oxbow Books, 72-82.

Lewis, M. 2007. *The bioarchaeology of children: perspectives from biological and forensic anthropology*. Cambridge: Cambridge University Press.

Lillehammer, G. 1989. A child is born. The child's world in an archaeological perspective. *Norwegian Archaeological Review* 22 (2) 89-105.

Lillios, K.T., 1999. Objects of memory: the ethnography and archaeology of heirlooms. *Journal of Archaeological Method and Theory*, 6(3), 235-262.

Lindstrom, L. 1990. Big men as ancestors: inspiration and copyrights in Tanna (Vanuatu). *Ethnology* 29 (4) 313-326.

Loth, S.R., and İşcan, M.Y. 1989. Morphological assessment of age in the adult: the thoracic region. In M.Y. İşcan (ed) *Age markers in the human skeleton*. Illinois: Charles C Thomas; 105-136.

Longworth, I.H. 1984. *Collared urns of the Bronze Age in Britain and Ireland*. Cambridge: Cambridge University Press.

Lovejoy, C.O. 1985. Dental wear in the Libben population: Its functional pattern and role in the determination of adult skeletal age at death. *American Journal of Physical Anthropology* 68 47-56.

Lovejoy, C.O., Meindl, R.S., Pryzbeck, T.R., and Musforth, R.P. 1985. Chronological metamorphosis of the auricular surface of the ilium: a new method for the determination of adult skeletal age at death. *American Journal of Physical Anthropology* 68 15-28.

Lyman, R.L. 1994. *Vertebrate Taphonomy*. Cambridge: Cambridge university press.

Lucas, G. 1996. Of death and debt. A history of the body in Neolithic and Early Bronze Age Yorkshire. *Journal of European Archaeology* 4 99-118.

- Lucy, S. 2005. The archaeology of age, in M.Diaz-Andreu, S.Lucy, S.Babic and D.Edwards (eds) *The archaeology of identity: approaches to gender, age, status, ethnicity and religion*. Oxon: Routledge, 43-66.
- Mahoney P. 2007. Microwear studies of diet in Early Bronze Age burials from Scotland, In M. Larsson and M. Parker Pearson (eds) *From the Baltic to Stonehenge: living with cultural diversity in the 3rd millennium BC*. B.A.R. International Series, 103-109.
- Masset, C. 1989. Age estimation based on cranial sutures. In M.Y. İşcan (ed) *Age markers in the human skeleton*. Illinois: Charles C Thomas; 71-104.
- Mays, S. and Cox, M. 2000. Sex determination in skeletal remains. In M. Cox and S. Mays (eds) *Human osteology in archaeology and forensic science*: 117-130. London: Greenwich Medical Media.
- Mays, S. and Taylor, G. 2003. A first prehistoric case of tuberculosis from Britain. *International Journal of Osteoarchaeology* 13 (4) 189-196.
- Mays, S. 1998. The archaeology of human bones. London: Routledge.
- Mays, S. 2000. Biodistance studies using craniometric variation in British archaeological skeletal material in, S. Mays and M. Cox (eds) *Human osteology in archaeology and forensic medicine*. London: Greenwich Medical Media, 277- 288.
- Mays, S. 2007. A likely case of scurvy from Early Bronze Age Britain. *International Journal of Osteoarchaeology* 18 (2) 178-197.
- Mays, S., 2010. Human osteoarchaeology in the UK 2001-2007: a bibliometric perspective. *International Journal of Osteoarchaeology*, 20(2), 192-204.
- Mays, S. 2012. The impact of case reports relative to other types of publication in palaeopathology. *International Journal of Osteoarchaeology* 22 81-85.
- Malim, T. 2001. Place and space in the Cambridgeshire Bronze Age in, J. Brück (ed) *Bronze Age landscapes: tradition and transformation*. Oxford: Oxbow books, 9-22.
- Manby, T.G. 1972. Excavation of barrows at Grindale and Boynton, East Yorkshire. *Yorkshire Archaeological Journal* 52 19-47.
- Marsden, B.M. 1964. *The excavation of a Bronze Age barrow on Haddon Grove farm, Lathkill Dale, Derbyshire*. *Derbyshire Archaeological Journal* 84 102-112.

Marsden, B. 1963. The re-excavation of Green Low – a Bronze Age round barrow on Alsop Moor Derbyshire. *Derbyshire Archaeological Journal* 83, 82-89.

Marsden, B.M. 1970. Excavation of the Bee Low round cairn, Youlgreave, Yorkshire. *The Antiquaries Journal*, 50 186-215.

McEvedy, C. and Jones, R. 1978. *Atlas of world population history*. Middlesex, England: Penguin Books Ltd.

McLaren, D. 2004. An important child's burial from Doune, Perth and Kinross, Scotland, in A.Gibson and A.Sheridan (eds) *From sickles to circles*. Gloucestershire: Tempus, 298-303.

McKinley, J. 1993. Bone fragment size and weights of bone from modern British cremations and the implications for the interpretations of archaeological cremations. *International Journal of Osteoarchaeology* 3 283-287.

McKinley, J. 1994. Bone fragment size in British cremation burials and its implications for pyre technology and ritual. *Journal of Archaeological Science* 21, 339-342.

McKinley, J.I. 1997. Bronze Age 'barrows' and funerary rites and rituals of cremation. *Proceedings of the Prehistoric Society*. 63, 129-145.

McKinley, J. 2000. The analysis of cremated bone. In M. Cox and S. Mays (eds) *Human osteology in archaeology and forensic science*: 403-421. London: Greenwich Medical Media.

McKinley, J.I. and Bond, J.M. 2001. Cremated bone, In D.R. Brothwell and A.M. Pollard (eds) *Handbook of Archaeological Sciences*. Chichester: Wiley, 281-292.

McKinley, J. 2006. Cremation . . . the cheap option? In R. Gowland and C. Knüsel (eds) *Social archaeology of funerary remains*. Oxford: Oxbow Books; 81-88.

McNeil, R. 1982. Burial mound, Church Lawton north and south. *Cheshire Archaeological Bulletin* 8; 46-50.

Melton, N., Montgomery, J., Knusel, C.J., Batt, C. Needham, S., Paker Pearson, M., Sheridan, A., Heron, C., Horsley, T., Schmidt, A., Evans, A., Carter, E., Edwards, H., Hargreaves, M., Janaway, R., Lynnerup, N., Northover, P., O'Connor, S., Ogden, A., Taylor, T., Wastling, V. and Wilson, A. 2010. Gristhorpe Man: an early Bronze Age log-coffin burial scientifically defined. *Antiquity* 84 (325) 796-815.

Mendl, R. and Lovejoy, C. 1985. Ecto-cranial suture closure: a revised method for the determination of skeletal age at death based on the lateral-anterior sutures. *American Journal of Physical Anthropology* 68 (1) 57-66.

Meskell, L. 2000. Cycles of life and death: narrative homology and archaeological realities. *World Archaeology* 31 (3) 423-441.

Meskell, L. 2007. Archaeologies of identity, In T. Insoll (ed) *The archaeology of identities: a reader*. Routledge: London.

Meyer, C. Nicklisch, N, Held, P, Fritsch, B and Alt, K.W. 2011. Tracing patterns of activity in the human skeleton: an overview of methods, problems and limits of interpretation. *HOMO-Journal of Comparative Human Biology* 62 202-217.

Milner, G.R., Wood, J.W., Boldsen, J.L., 2007. Paleodemography, in M.A. Katzenberg, S.R. Saunders (eds) *Biological Anthropology of the Human Skeleton*. New York: Wiley-Liss, 467-497.

Milner, G.R., Wood, J. W. and Boldsen J.L. 2008. Advances in paleodemography, in M.A. Katzenburg and S.R. Saunders (eds) *Biological anthropology of the human skeleton*. Hoboken, NJ: Wiley, 561-600.

Mizoguchi, K. 1993. Time in the reproduction of mortuary practices. *World Archaeology* 25, 223-35.

Moffett, L. 1991. Pignut tubers from a Bronze Age cremation at Barrow Hills, Oxfordshire and the importance of vegetable tubers in the prehistoric period. *Journal of Archaeological Science* 18, 187-191.

Molnar, P, Ahlstrom, T.P, and Leden, I. 2009. Osteoarthritis and activity – An analysis of the relationship between eburnation, Musculoskeletal Stress Markers (MSM) and age in two Neolithic hunter-gatherer populations from Gotland, Sweden. *International Journal of Osteoarchaeology* 21 (3) 283-291.

Montgomery, J, Cooper, R.E. & Evans, J.A. 2007. Foragers, farmers or foreigners? An assessment of dietary strontium isotope variation in Middle Neolithic and Early Bronze Age East Yorkshire, in M.Larsson and M.Parker Pearson (eds) *From Stonehenge to the Baltic: Living with cultural diversity in the third millennium BC*. International Series BAR 1692: 65-75.

Montgomery, H. 2009. *An introduction to childhood*. Chichester, West Sussex: Wiley-Blackwell.

Moore, M.J. 1988. The human lifespan, in P.Silverman (ed) *The elderly as modern pioneers*. Chichester: John Wiley and Sons Ltd, 54-72.

Moore, A. 2009. Hearth and home: the burial of infants within Romano-British domestic contexts. *Childhood in the past* 2 (1) 33-54.

Morgan, V. and Morgan, P. 2004. Prehistoric Cheshire. England: Landmark Publishing Ltd.

Morris, I. 1991. The archaeology of ancestors: the Saxe/Goldstein hypothesis revisited. *Cambridge Archaeological Journal* 1 (2) 147-169.

Mortimer, J. R. 1905. *Forty years researches in British and Saxon burial mounds of east Yorkshire*. England: A Brown and Son.

Mullin, D. 2007. 'A bit close for comfort': Early Bronze Age burial in the Cheshire Basin, in, J. Last (ed) *Beyond the grave: new perspectives on barrows*. Oxford: Oxbow Books, 83-90.

Murphy, P.J. 2011. A gazetteer of vertebrate remains from the caves in the Yorkshire Dales references in caving club journals and allied literature. *Proceedings of the University of Bristol Speleological Society*, 25 (2) 253-264.

Needham, S. and Woodward, A. 2008. The Clandon barrow finery: a synopsis of success in an Early Bronze Age world. *Proceedings of the Prehistoric Society* 74 1-52.

Needham, S. 1996. Chronology and periodisation in the British Bronze Age. *Acta Archaeologica* 67 121-140.

Needham, S. 2011. A case and place for the British Chalcolithic, in M.Allen, J.Gardiner, and A.Sheridan (eds) *Is there a British Chalcolithic? People, place and polity in the late 3<sup>rd</sup> millennium*. Oxford: Oxbow Books, 1-26.

Newstead, R. 1939. Bronze Age burial at Betchton, Cheshire. *Journal of the Chester Archaeological Society* 33 40-44.

Noble, G. and Brophy, K. 2011. Ritual and remembrance at a prehistoric ceremonial complex in central Scotland: excavations at Forteviot, Perth and Kinross. *Antiquity*, 85 (329) 787-804.



Nowakowski, J.A. 2007. Digging deeper into barrow ditches: investigating the making of Early Bronze Age memories in Cornwall in, J. Last (ed) *Beyond the grave: new perspectives on barrows*. Oxford: Oxbow Books, 91-112.

Ogden, A. 2007. Advances in the palaeopathology of teeth and jaws, in S.Mays and R.Pinhasi (eds) *Advances in human palaeopathology*. Chichester: John Wiley and Sons Ltd, 283-308.

Olivier, A.C.H. 1988. Excavation of a Bronze Age funerary cairn at Manor farm, Borwick, North Lancs. *Proceedings of the Prehistoric Society* 53 129-86.

Ortner, D.J. 1991. Theoretical and methodological issues in palaeopathology, In D.J. Ortner and A.C. Aufderheide (eds) *Human Palaeopathology: Current Synthesis and Future Options*. Smithsonian Institution Press: Washington, DC, 5-11.

Ortner, D. 2003. *Identification of pathological conditions in human skeletal remains*. USA: Academic Press.

Ortner, D. and Theobald, G. 2000. Paleopathological evidence of malnutrition. *CWEF* 34-43.

Osgood, R. 2006. The dead of Tomarton: Bronze Age combat victims? In, T. Otto, H.Thrane and H. Vandkilde (eds) *Warfare and society: archaeological and social anthropological perspectives*. Denmark: Aarhus University Press, 331-340.

Ossa, K and Crews, D. 2005. Biological and genetic theories of the process of senescence throughout life, in C.Sauvain-Dugerdill, H.Leridon, N.Mascie-Taylor and M.Oris (eds) *Human clocks: the bio-cultural meanings of age*. Switzerland: Peter Lang, 61-84.

Otto, T., Thrane, H. and Vandkilde, H. 2006. *Warfare and society: archaeological and social anthropological perspectives*. Denmark: Aarhus University Press.

Owens, L. 2007. Craniofacial trauma in the prehispanic Canary Islands. *International Journal of Osteoarchaeology* 16 (6) 493-505.

Owoc, M.A. 2002. Munselling the mound: the use of soil colour as metaphor in British Bronze Age funerary ritual, in A.Jones and G.MacGregor (eds) *Colouring the past*. Oxford: Berg, 127-140.

- Owoc, M.A. 2007. To build or not to build: Bronze Age monument construction as technological practice, in J. Last (ed) *Beyond the Grave: new perspectives on barrows*. Oxford: Oxbow Books, 113-126.
- Pacitto, A.L. 1970. Excavations of the Pockley Barrows, North Ryedale. *Ryedale Historian* 5.
- Pader, E.J. 1982. *Symbolism, social relations and the interpretation of mortuary remains*. Oxford: BAR International Series 130.
- Palastanga, N, Field, D and Soames R. 2006. *Anatomy and human movement: structure and function*. London: Elsevier.
- Park, VM and Roberts, CA and Jakob, T. 2010. Palaeopathology in Britain: a critical analysis of publications with the aim of exploring recent trends (1997—2006). *International Journal of Osteoarchaeology* 20 (5) 497-507.
- Parker Pearson, M. 1982. Mortuary practices, society and ideology: an ethnoarchaeological study, In I.Hodder (ed) *Symbolic and structural archaeology*. Cambridge: Cambridge University Press, 99-113.
- Parker Pearson, M. 1993. *Bronze Age Britain*. England: Batsford.
- Parker Pearson, M. 1999. *The archaeology of death and burial*. Stroud: Sutton.
- Parker Pearson, M. 2000. Mortuary practices, society and ideology: an ethnoarchaeological study, in J.Thomas (ed) *Interpretive Archaeology*. London: Leicester University Press, 246-265.
- Pearson, K. 1899. On the reconstruction of stature of prehistoric races. *Philosophical transactions of the Royal Society of London* 192 1-128.
- Pennington, R. 1877. *Notes on the barrows and bone-caves of Derbyshire: with an account of a descent into Eldon Hole*. Whitefish, MT: Kessinger Publishing.
- Petersen, F. 1972. Traditions of multiple burial in later Neolithic and Early Bronze Age England. *Archaeological Journal* 129 22-55.
- Photos-Jones, E., Ballin Smith, B., Hall, A.J. and Jones, R.E. 2007. On intent to make cramp: an interpretation of vitreous seaweed cremation 'waste' from prehistoric burial sites in Orkney, Scotland. *Oxford Journal of Archaeology* 26 (1) 1-23.

- Pierpont, S. 1980. *Social patterns in Yorkshire prehistory, 3500-750 B.C.* BAR British Series 74.
- Pollard, A, Batt, C, Stern, B and Young, S. 2007. *Analytical chemistry in archaeology.* Cambridge: Cambridge University Press.
- Porčić, M and Stefanović, S. 2009. Physical activity and social status in Early Bronze Age society: the Mokrin necropolis. *Journal of Anthropological Archaeology* 28 259-273.
- Powlesland, D., Haughton, C. and Hanson, J. 1986. Excavations at Heslerton, North Yorkshire, 1978-82'. *Archaeological Journal* 143 53-173.
- Radley, J. 1970. A triple cairn and a rectangular cairn of the Bronze Age on Beeley Moore. *Derbyshire Archaeology Journal* 89 1-17.
- Railton, M. 2011. Archaeological evaluation of a Bronze Age cremation cemetery on Brackenber Moor, Appleby-in-Westmorland, Cumbria. Unpublished archaeology report: North Pennines Archaeology Limited.
- Randsjö-Arvidson, A, Chintu, K, Ng'andu, N, Eriksson, B, Susu, B, Christensson, K and Diwan, V. 1998. Maternal and infant health problems after normal childbirth: a randomized control study in Zambia. *Journal of Epidemiology of Community Health* 52 385-391.
- Redfern, R.C. 2010. A regional examination of surgery and fracture treatment in Iron Age and Roman Britain. *International Journal of Osteoarchaeology* 20 (4) 443-471.
- Redfern, R.C. and DeWitte, S.N. 2011. A new approach to the study of Romanization in Britain: A regional perspective of cultural change in late Iron Age and Roman Dorset using the Siler and Gompertz-Makeham models of mortality. *American Journal of Physical Anthropology*. 144 (2) 269-285.
- Reid, D.J. and Dean, M.C. 2000. Brief communication: the timing of linear enamel hypoplasias on human anterior teeth. *American Journal of Physical Anthropology* 113 135-139.
- Reece, R. 1994. Are Bayesian statistics useful to archaeological reasoning? *Antiquity* 68 848-850.

- Renfrew, C. 1973. Monuments, mobilization and social organisation in Neolithic Wessex, in C.Renfrew (ed) *The explanation of culture change: models in prehistory*. London: Duckworth, 539-558.
- Richardson, C. and Hallam, A.M. 1995. Artefacts from Greystoke Moor. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*. 35-53.
- Roberts, C.A. and Cox, M. 2003. *Health & disease in Britain: from prehistory to the present day*. Gloucester: Sutton Publishing.
- Roberts, B.W. 2008. The Bronze Age, in L.Atkins, R.Atkins and V.Leitch (eds) *The Handbook of British Archaeology*, 60-91. London: Constable and Robinson.
- Robb, J, Bigazzi, R, Lazzarini, L, Scarsini, C and Sonego, F. 2001. Social “status” and biological “status”: A comparison of grave goods and skeletal indicators from Pontecagnano. *American Journal of Physical Anthropology*, 115 (3) 213-222.
- Roe. F. 1978. Typology of stone implements with shaftholes, in T.H.McK. Clough, W.A. Cummins (Eds.), *Stone Axe Studies, Council for British Archaeology Research Report No. 23*, Council for British Archaeology, London 23–47.
- Rogers, J, Waldron, T, Dieppe, P. and Watt, I. 1987. Arthropathies in palaeopathology: the basis of classification according to most probable cause. *Journal of Archaeological Science* 14, 179-193.
- Rowley-Conwy, P. 2004. How the west was lost: a reconsideration of agricultural origins in Britain, Ireland and southern Scandinavia. *Current Anthropology* 45 (S4) 83-113.
- Rowley, G. 1974. Barrow at Gawsworth. *Cheshire Archaeological Bulletin* 2; 25-26.
- Rowley, G. 1977. Excavation of a barrow at Woodhouse end, Gawsworth, Macclesfield. *Journal of Chester Archaeology Society* 60; 1-34.
- Rowley, G. 1982. *Macclesfield in prehistory*. Macclesfield, UK: Gordon Rowley.
- Sahlins, M. 1963. Poor man, rich man, big man, chief. *Comparative studies in Society and History* 5 285-383.
- Saruw, T. 2006. Male symbols or warrior identities? The ‘archery burials’ of Danish Bell Beaker culture. *Journal of Anthropological Archaeology* 26 65-87.

Saville, A. 1990. Hazleton North, Gloucestershire, 1979-82: the excavation of a Neolithic long cairn of the Cotswold-Severn group. London: English Heritage.

Saxe, A. 1970. *Social dimensions of mortuary practices*. University of Michigan PhD thesis. Michigan: University of Michigan.

Schaefer, M., Black, S. and Scheuer, L. 2009. *Juvenile osteology: a laboratory and field manual*. London: Academic Press.

Scheuer, L and Black S.M. 2000a. *Developmental juvenile osteology*. London: Academic Press.

Scheuer, L and Black, S.M. 2000b. Development and ageing of juvenile skeletons. In M. Cox and S. Mays (eds) *Human osteology in archaeology and forensic science*: 2-22. London: Greenwich Medical Media.

Schulting, R.J. and Wysocki, M. 2005. 'In this chambered tumulus were found cleft skulls...': an assessment of the evidence for cranial trauma in the British Neolithic. *Proceedings of the Prehistoric Society* 71 107-138.

Schulting, R. in press. War without warriors? The nature of interpersonal conflict before the emergence of formalised warrior elites, In S.Ralph (ed) *The archaeology of violence: an integrated approach to the study of violence and conflict*. Albany: SUNY Press.

Schutkowski, H. 1993. Sex determination of infant and juvenile skeletons: I Morphognostic features. *American Journal of Physical Anthropology* 90 199-205.

Sciama, L.D. 1998. Gender in the making, trading and uses of beads. An introductory essay, in L.D.Sciama and J.B.Eicher (eds) *Beads and bead makers: gender, material culture and meaning*. Oxford: Berg, 1-46.

Scott, S. 2002. *Demography and nutrition: evidence from historical and contemporary populations*. Oxford: Blackwell.

Shell, C.A. 2000. Metalworker or shaman: Early Bronze Age Upton Lovell G2a burial. *Antiquity* 74 271-2.

Sheets-Johnstone, M. 1999. Emotion and movement. A beginning empirical-phenomenological analysis of their relationship. *Journal of Consciousness Studies* 6 259-277.

Shepherd, A. 2012. Stepping out together: men, women and their beakers in time and space, in M.Allen, J.Gardiner and A.Sheridan (eds) *Is there a British Chalcolithic? People, place and polity in the late third millennium*. Oxford: Oxbow Books, 257-280.

Shennan, S. 1975. The social organization at Branč. *Antiquity* 49 279-288.

Shennan, S. 1978. Archaeological cultures: an empirical investigation, in I.Hodder (ed) *The spatial organisation of culture*. London: Duckworth, 114-139.

Shennan, S. 1982. Ideology, change and the European Early Bronze Age, in I.Hodder (ed.) *Symbolic and Structural Archaeology*. Cambridge: Cambridge University Press, 155-61.

Sheridan, A and Davis, M. 2002. Investigating jet and jet like objects from prehistoric Scotland: the national museums of Scotland project. *Antiquity* 76 812-825.

Sherratt, A. 1987. Cups that cheered, in W.HWaldren and R.C.Kennard (eds) *Beakers in Britain and Europe*. Oxford: BAR International Series 331, 81-114.

Sheridan, A. 2007a. Scottish food vessel chronology revisited, in A. Gibson and A. Sheridan (eds) *From Sickles to Circles. Britain and Ireland at the time of Stonehenge*. Stroud: Tempus, 243-269.

Sheridan, A. 2007b. Scottish beaker dates: the good, the bad and the ugly, in M. Larrson and M. Parker Pearson (eds) *From the Baltic to Stonehenge: living with cultural diversity in the 3rd millennium BC*. B.A.R. International Series, 103-109.

Shipman, P, Foster, G, and Schoeninger, M. 1984. Burnt bones and teeth: an experimental study of colour, morphology, crystal structure and shrinkage. *Journal of Archaeological Science* 11 307-325.

Simpson, D. and Coles, J. 1990. Excavations at Grandtully, Perthshire. *Proceedings of the Society of Antiquarians of Scotland* 120 33-44.

Sofaer Derevenski, J., 1997. Age and gender at the site of Tiszapolgár-Basatanya, Hungary. *Antiquity*, 71(274), 875-889.

Sofaer Derevenski, J., 2000. Rings of life: the role of early metalwork in mediating the gendered life course. *World archaeology*, 31(3), 389-406.

Sofaer Derevenski, J. 2002. Engendering context. Context as gendered practice in the early upper Bronze Age of the upper Thames Valley, UK. *European Journal of Archaeology* 5/2, 191-211.

Sofaer, J. 2006a. *The body as material culture: a theoretical osteoarchaeology*. Cambridge: Cambridge University Press.

Sofaer, J. 2006b. Gender, bioarchaeology and human ontogeny. In, R. Gowland and C. Knüsel, (eds.) *The Social Archaeology of Funerary Remains*. Oxford: Oxbow Books, 155-167.

Sofaer, J. 2011. Towards a social bioarchaeology of age, in S.C. Agarwal and Glencross (eds) *Social Bioarchaeology*. Cambridge: Cambridge University Press, 285-311.

Sökefeld, M. 1999. Debating self, identity, and culture in anthropology. *Current Anthropology* 40 417-447.

Sørensen, M. 1997. Reading dress: the construction of social categories and identities in Bronze Age Europe. *Journal of European Archaeology* 5 (1) 93-114.

Sørensen, M. 2000. *Gender Archaeology*. Cambridge: Polity Press.

Sørensen, T.F. 2009 The Presence of the Dead: Cemeteries, cremation and the staging of non-place. *Journal of Social Archaeology* 9(1): 110-135.

Small, A, Bruce, M.F, and Shepherd, I.A.G. 1988. A beaker child burial from Catterline, Kincardine and Deeside. *Proceedings of the Society of Antiquarians of Scotland* 118 71-77.

Smith, M. 1994. The excavated Bronze Age burial mounds of north-east Yorkshire. *Architectural and Archaeological Society of Durham and Northumberland research reports* 1 70-72.

Smith, M, Brickley, M.B. and Leach, S. 2007. Experimental evidence for lithic projectile injuries: improving identification of an under-recognised phenomenon. *Journal of Archaeological Science* 34 540-553.

Smith, M. and Brickley, M.B. 2004. Analysis and interpretation of flint toolmarks found on bones from West Tump long barrow, Gloucester. *International Journal of Osteoarchaeology* 14(1), 18-33.

Smith, M. and Brickley, M. 2009. *The people of the Long Barrows*. Gloucestershire: The History Press.

Spector, J. 1991. What this awl means: towards a feminist archaeology, in J.M.Gero and M.W.Conkey (eds) *Engendering Archaeology: women and prehistory*. Oxford: Blackwell, 388-407.

Stevens, C.J. and Fuller, D.Q. 2012. Did Neolithic farming fail? The case for a Bronze Age agricultural revolution in the British Isles. *Antiquity* 86, 707-722.

Steele, J. and Mays, S. 1995. Handedness and directional asymmetry in the long bones of the human upper limb. *International Journal of Osteoarchaeology* 5 (1) 39-49.

Stirland, A. 1993. Asymmetry and activity-related change in the male humerus. *International Journal of Osteoarchaeology* 3 105-113.

Stojanowski, C.M. & Buikstra, J.E., 2005. Research trends in human osteology: a content analysis of papers published in the American Journal of Physical Anthropology. *American journal of physical anthropology*, 128(1) 98-109.

Stojanowski, C.M. & Schillaci, M.A., 2006. Phenotypic approaches for understanding patterns of intracemetery biological variation. *American Journal of Physical Anthropology*, 131, 49-88.

Stone, P. and Walrath, D. 2006. The Gendered Skeleton: Anthropological Interpretations of the Bony Pelvis, In, R. Gowland and C. Knüsel, (eds.) *The Social Archaeology of Funerary Remains*. Oxford: Oxbow Books, 155-167.

Strathern, A. 1971. *The rope of moka*. Cambridge: Cambridge University Press.

Sutcliffe, W.H. 1898-1900. Hades Hill barrow. *Rochdale Literary and Scientific Society* 56-63

Symes, S.A., Rainwater, C.W., Chapman, E.N., Desina, B.A., Gipson, R. and Piper, A.L. 2008. Patterned thermal destruction of human remains in a forensic setting, in C.W. Schmidit and S.A. Symes (eds) *The analysis of burned human remains*. Academic Press: London.

Taylor, M.W. 1881. Urn and burial found at Moorhouses. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeology Society* 5 91-3.



Taylor, G.M. and Murphy, E. and Hopkins, R. and Rutland, P. and Chistov, Y. 2007. First report of *Mycobacterium bovis* DNA in human remains from the Iron Age. *Microbiology* 153 (4) 1243-1249.

Thomas, J., 1991. Reading the body: Beaker funerary practice in Britain. In: Garwood, P., Jennings, D., Skeates, R., Toms, J. (Eds.), *Sacred and Profane. Proceedings of a Conference on Archaeology, Ritual and Religion*. Oxford: Oxford University Committee for Archaeology, 33–42.

Thomas, J. 1999. *Understanding the Neolithic*. London: Routledge.

Thomas, N. 2005. *The Bronze Age Barrow Cemetery and Related Earthworks, in the Parishes of Collingbourne Ducis and Collingbourne Kingston, Excavations 1953, 1955 and 1957*: 153-164. Devizes: Wiltshire Archaeological and Natural History Society.

Thomas, A, Chambon, P, Murail, P. 2011. Unpacking burial and rank: the role of children in the first monumental cemeteries of western Europe (4600-4300 BC). *Antiquity* 85, 329 772-786.

Thorpe, I.J. and Richards, C. 1984. The decline of ritual authority and the introduction of beakers into Britain, in R. Bradley and J. Gardiner (eds) *Neolithic studies: a review of some current research* BAR 133, 67-84

Thorpe, N. 2006. Fighting and Feuding in Neolithic and Bronze Age Britain and Ireland. In, T. Otto, H. Thrane and H. Vandkilde (eds) *Warfare and society: archaeological and social anthropological perspectives*. Denmark: Aarhus University Press, 141-166.

Thornley, C. 1904. Excavations at Kirkoswald. *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society* 13 389-394.

Tipping, R. 1994. "Ritual" Floral Tributes in the Scottish Bronze Age-Palynological Evidence. *Journal of Archaeological Science*, 21, 133-139.

Timberlake, S. and Prag, A.J.N.W. 2005. *The archaeology of Alderley Edge*. BAR British Series 396.

Trickett, M.A, Budd, P, Montgomery, J and Evans, J. 2003. An assessment of solubility profiling as a decontamination procedure for the Sr analysis of archaeological human skeletal tissue. *Applied Geochemistry* 18 (5) 653-658.

Trotter, M. 1958. Estimation of stature from long bones of American whites and negroes. *American Journal of Physical Anthropology* 10 463-514.

Tuckwell, A. 1975. Patterns of burial orientation in the round barrows of East Yorkshire. *Bulletin of the Institute of Archaeology* 12, 95-123.

Tung, T.A. 2007. *Trauma and violence in the Wari empire of the Peruvian Andes: Warfare, raids and ritual fights*. *American Journal of Physical Anthropology* 133 (3) 941-956.

Turner, W. 1899. *Ancient remains near Buxton*. Buxton: C.F. Wardley.

Tyrrell, A. 2000. Skeletal non-metric traits and the assessment of inter-and intra-population diversity: past problems and future potential, in S. Mays and M. Cox (eds) *Human osteology in archaeology and forensic science*. Cambridge: Cambridge University Press. 289 -306.

Tyson, N. 1994. Whitelaw Hill, Excavation of a Bronze Age Cremation Cemetery. *Manchester Archaeological Bulletin*, 9 5-22.

Tyson, N. 1984. Excavation of Bank Lane Cairn. *Lancashire Archaeological Bulletin* 10 23-4.

Waldron, T., 2007. *Palaeoepidemiology: The Measure of Disease in the Human Past*. California: Left Coast Press.

Waldron, T. 2009. *Palaeopathology*. Cambridge: Cambridge University Press.

Walker, M. 2005. *Quaternary dating methods*. Chichester, West Sussex: John Wiley and Sons, Ltd.

Walker, P.L, Miller, K and Richman, R. 2008. Time, temperature, and oxygen availability: an experimental study of the effects of environmental conditions on the colour and organic content of cremated bone. In, C.W.Schmidt and S.A.Symes (eds) *The analysis of burned human remains*. London: Academic Press, 129-136.

Walker, P.L, Bathhurst, R.R, Richman, R, Gjerdrum, T, and Andrushko, V.A. 2009. The causes of porotic hyperostosis and cribra orbitalia: A reappraisal of the iron-deficiency-anemia hypothesis. *American Journal of Physical Anthropology*, 139(2) 109-125.

Walker, R.S, Flinn, M.V, and Hill, K.R. 2010. Evolutionary history of partible paternity in lowland South America. *Proceedings of the National Academy of Sciences* 107 (45) 19195-19200.

Walrath D. 2006. Gender, Genes, and the Evolution of Human Birth, in P.L. Geller and M.K. Stockett (eds) *Feminist Anthropology: Past, Present, and Future*. Philadelphia: University of Pennsylvania Press.

Walsh, S. In Press. Is it possible to access identity from the osteoarchaeological record? Hindlow: a Bronze Age case study, in R.Crozier, V.Ginn and R.Erlander (eds) *Exploring prehistoric identity in Northwest Europe: our construct or theirs?* Oxford: Oxbow Books.

Ward, J. 1901 "Notes on a pre-historic burial-place at Megdale, near Matlock Bridge" *Derbyshire Archaeological Journal* 23 40-47.

Waterman,D.M. 1951. Quernhow: a Food-Vessel Barrow in Yorkshire. *The Antiquaries Journal* 31 1-24.

Watts, L and Rahtz, P. 1984. Cowlam Wold barrows. York: University of York.

Weiss, E. 2003. Understanding muscle markers: aggregation and construct validity. *American Journal of Physical Anthropology* 121 230-240.

Weiss, E. and Jurmain, R. 2007. Osteoarthritis revisited: a contemporary review of aetiology. *International Journal of Osteoarchaeology* 17 437-450.

Wells, C. 1960. A study of cremation. *Antiquity* 34, 29-37.

Whittle, A, Barclay, A, Bayliss, A, McFadyen, L, Schulting, R and Wysocki, M. 2007. Building for the dead: Events, processes and changing worldviews from the thirty-eighth to the thirty-fourth centuries cal. BC in southern Britain. *Cambridge Archaeological Journal*. 17 (S1) 123-147.

Whittle, A. and Wysocki, M. 1998. Parc le Breos Cwm transepted long cairn, Gower, West Glamorgan: date, contents and context. *Proceedings of the Prehistoric Society* 64 139-182.

Wilson, D. 1981. Withington. *Current Archaeology* 7 155-157.

Wood, E. S. 1972. The excavation of a Bronze Age barrow: Green Howe, North Deighton, Yorkshire. *Yorkshire Archaeological Journal* 43, 2-32.

Wood, J.W., Milner, G.R., Harpending, H.C., Weiss, K.M., Cohen, M.N. , Eisenberg, L.E., Hutchinson, D.L., Jankauskas, R., Cesnys, G. and Katzenberg, M.A. 1992. The

Osteological Paradox: Problems of Inferring Prehistoric Health from Skeletal Samples. *Current Anthropology*, 33 (4) 343-370.

Woodward, A. 2000. *British barrows: a matter of life and death*. Stroud: Tempus.

Woodward, A. 2002. Beads and Beakers: heirlooms and relics in the British Early Bronze Age. *Antiquity* 76 104-7.

Woodward, A and Hunter, J. 2011. *An examination of prehistoric stone bracers from Britain*. Oxford: Oxbow.

Wylie, A. 1991. 1991. Gender theory and the archaeological record: why is there no archaeology of gender, in J.M. Gero and M.W. Conkey (eds) *Engendering archaeology: Women and prehistory*. Oxford: Blackwell, 31-56.

Ubelaker, D.H., 2009. The forensic evaluation of burned skeletal remains: a synthesis. *Forensic Science International*, 183(1-3), 1-5.

Varley, W.J. 1938. The Bleasdale circle. *The Antiquaries Journal* 18 (2) 154-171.

Vercellotti, G, Stout, S.D, Boano, R and Sciulli, P.W. Intrapopulation variation in stature and body proportions: social stature and sex differences in an Italian population. *American Journal of Physical Anthropology* 145 (2) 203-214.

Villa, P and Mahieu, E. 1991. Breakage patterns of human long bones. *Journal of Human Evolution* 21, 27-48.

York, J. 2002. The life cycle of Bronze Age metalwork from the Thames. *Oxford Journal of Archaeology* 21 (1) 77-92.

Zuckerman, M and Armelagos, G. 2011. The origins of biocultural dimensions in bioarchaeology, in S. Agarwal and B. Glencross (eds) *Social Bioarchaeology*. Oxford: Blackwell, 15-43.